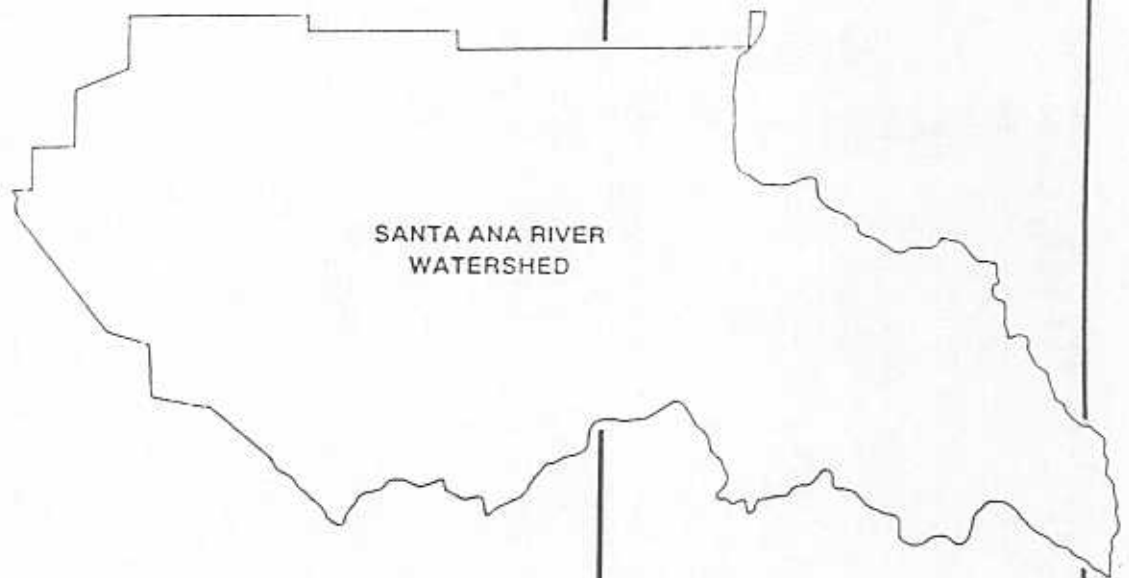


SANTA ANA
REGIONAL
DRAINAGE AREA
MANAGEMENT
PLAN



SANTA ANA RIVER
WATERSHED

Permittees:
Riverside County Flood Control and
Water Conservation District
County of Riverside
Beaumont
Calimesa
Canyon Lake
Corona
Hemet
Lake Elsinore
Moreno Valley
Norco
Perris
Riverside
San Jacinto

Prepared for:
Riverside County Flood Control and
Water Conservation District
1995 Market Street
Riverside, CA 92502

February 1993

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION AND BACKGROUND	1-1
1.2 ORGANIZATION OF THE SANTA ANA REGIONAL DAMP	1-2
1.3 OVERVIEW OF THE SANTA ANA REGIONAL DAMP DEVELOPMENT PROCESS	1-3
1.4 REGULATORY FRAMEWORK	1-4
1.4.1 Background Re: Federal NPDES Storm Water Regulations	1-4
1.4.2 NPDES Permitting in California	1-4
1.4.3 "Early" Permitting in California	1-5
1.4.4 Overview of Santa Ana Region NPDES Permit	1-5
1.4.5 Specific Requirements of the Santa Ana Region NPDES Permit	1-6
1.4.6 Roles and Responsibilities	1-6
1.5 SANTA ANA DRAINAGE AREA DESCRIPTION	1-8
1.6 OBJECTIVES OF THE SAR-DAMP	1-8
1.7 SAR-DAMP DEVELOPMENT PROCESS	1-9
1.7.1 BMP Development, Selection and Schedule	1-9
1.7.2 Implementation of a SWMP	1-11
1.7.3 SAR-DAMP Schedule	1-10
1.8 PUBLIC INVOLVEMENT PROCESS	1-11
1.9 ANNUAL REPORTING	1-12
2.0 EXISTING WATER QUALITY PROBLEMS AND IMPROVEMENT PRIORITIES	2-1
2.1 INTRODUCTION	2-1
2.2 OVERVIEW OF URBAN STORM WATER POLLUTION	2-2
2.3 OVERVIEW OF AVAILABLE WATER QUALITY DATA	2-3
2.4 PRIORITIES FOR ACTION	2-4

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
3.4.1 Prioritized Water Quality Indicators	2-5
3.4.2 Actions to Reduce Storm Water Pollutants	2-7
3.0 PLAN FOR EXISTING RESIDENTIAL AND COMMERCIAL/INDUSTRIAL AREAS	3-1
3.1 INTRODUCTION	3-1
3.2 PERMIT REQUIREMENTS	3-2
3.3 EXISTING POLLUTION CONTROLS FOR RESIDENTIAL AND COMMERCIAL/INDUSTRIAL AREAS	3-3
3.3.1 Description of Existing Agency BMP Programs	3-3
3.4 MODIFICATIONS AND ADDITIONS TO EXISTING BMPs FOR RESIDENTIAL AND COMMERCIAL/INDUSTRIAL AREAS	3-9
4.0 PLAN FOR CONSTRUCTION SITES AND NEW DEVELOPMENT	4-1
4.1 INTRODUCTION	4-1
4.2 CONSTRUCTION SITES	4-1
4.2.1 Permit Requirements for Construction Sites	4-1
4.2.2 Potential Pollutants Generated at Construction Sites	4-2
4.2.3 Existing Construction Site BMPs	4-2
4.2.4 Additional BMPs for Construction Sites	4-5
4.3 NEW DEVELOPMENT	4-11
4.3.1 Permit Requirements for New Development	4-11
4.3.2 Potential Pollutants Generated by New Development	4-11
4.3.3 Existing BMPs Currently Employed for New Development	4-12
4.3.4 Additional BMPs for New Developments	4-12
5.0 FUNDING SOURCES	5-1
5.1 INTRODUCTION	5-1
5.2 RCFC&WCD	5-1

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
5.3 RIVERSIDE COUNTY (UNINCORPORATED AREAS)	5-2
5.4 THE CITIES OF CORONA, RIVERSIDE, AND CALIMESA	5-3
5.5 OTHER CO-PERMITTEES	5-3
6.0 ANNUAL REPORTING	6-1
6.1 INTRODUCTION	6-1
6.2 METHOD TO EVALUATE BMPs	6-2
6.2.1 Compliance Evaluation - Existing Residential and Commercial/Industrial Areas	6-3
6.2.2 Compliance Evaluation - Construction Site and New Development	6-3
6.2.3 Evaluation Schedule	6-3
7.0 STRUCTURAL CONTROLS	
7.1 INTRODUCTION	5-1
7.2 THE SANTA ANA REGIONAL APPROACH	5-2

TABLE OF CONTENTS (Continued)

FIGURES

- 1-1 Riverside County and Regional Water Quality Control Board Areas
- 1-2 Project Area Map - Riverside County Drainage Area Management Plan
- 1-3 Santa Ana Region by Phase
- 1-4 Storm Water Management Program Development
- 1-5 Regional DAMP Development Process
- 1-6 BMP Implementation Schedule

TABLES

- 1-1 Overview of BMP Evaluation and Planning Process
- 2-1 Overview of Urban Runoff Pollution
- 3-1 Descriptions of BMPS and Effect on Pollutants
- 3-2 Permittees Existing BMPs
- 5-1 FY 1993-94 Budget and Funding Source
- 6-1 Environmental Education Activities Directed at the Public
- 6-2 Environmental Education Activities Directed at Permittee Agencies
- 6-3 Modifications of Existing BMP Programs - Solid Waste Activities and Road & Drainage System Operation & Maintenance
- 6-4 Modifications to Existing BMP Programs - Regulatory and Legal Activities
- 6-5 Construction Site BMPs - Regulatory and Educational Activities
- 6-6 New Development BMP Programs - Regulatory and Educational Activities

Appendices

- A. Glossary of Terms
- B. Nineteen Step Process Used to Develop the SAR-DAMP
- C. Comments on DAMP for Riverside County
- D. Description of Legal Authorities and Model Ordinance
- E. Public Education/Participation Element

ACKNOWLEDGEMENTS

This report was prepared by Woodward-Clyde Consultants under the direction of Mr. Ken Edwards, General Manager-Chief Engineer, Mr. Don Greywood, Principal Engineer, and Mr. Jason Christie, Senior Civil Engineer, of the Riverside County Flood Control and Water Conservation District. Mr. John Ristow, Transportation Planner for the County of Riverside provided additional support to RCFC&WCD in the preparation of this report. Information for this report was provided by the municipalities in the Riverside County portion of the Santa Ana Regional Water Quality Control Board area through questionnaires and public workshops. These municipalities along with the County and the RCFC&WCD reviewed earlier versions of this report and provided helpful comments and suggestions. Mr. Mark Adelson and Ms. Pavlova Vitale of the Santa Ana Regional Water Quality Control Board and Ms. Pamela Barksdale formerly of the Santa Ana Regional Water Quality Control Board also provided a number of helpful comments.

EXECUTIVE SUMMARY

Permit Requirements

In May 1990, the Riverside County Flood Control and Water Conservation District (RCFC&WCD) and the County of Riverside joined with the cities of Beaumont, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto to submit an "early" application for a National Pollutant Discharge Elimination System (NPDES) storm water permit. A permit was issued to them in July 1990 by the Santa Ana Regional Water Quality Control Board (RWQCB). On July 10, 1992, the cities of Calimesa and Canyon Lake were added to the Permit. The RCFC&WCD has been designated lead permittee and the remaining 11 municipalities plus the County are considered co-permittees¹.

Background on the SAR-DAMP

The Santa Ana Regional Drainage Area Management Plan (SAR-DAMP) has been prepared to meet the requirements of the Santa Ana NPDES storm water permit. The SAR-DAMP describes the overall storm water management strategies planned by the permittees to protect the beneficial uses of the receiving waters in the Santa Ana drainage area. A parent document to the SAR-DAMP, titled the Drainage Area Management Plan for Riverside County (DAMP for Riverside County), served as the basis for the SAR-DAMP. The SAR-DAMP is a critical intermediate step towards establishing a Storm Water Management Program (SWMP) for the Santa Ana region. The SWMP will be a series of actions guided by the Best Management Practices (BMPs) outlined in the SAR-DAMP.

¹ "Permittees" refers to the RCFC&WCD plus the 11 municipalities and the County.
"Co-permittees" refers only to the 11 municipalities and the County (excludes reference the RCFC&WCD - the lead permittee).

Selection of Best Management Practices

Workshops, attended by the permittees of the Santa Ana region, were held to provide direction in the creation of the SAR-DAMP by tailoring the DAMP for Riverside County to meet the needs and constraints of the Santa Ana region. At the workshop, the permittees:

- identified the objectives of the SAR-DAMP
- identified the perceived water quality problems and the associated sources of the problems
- developed a series of action items needed to control pollutants entering storm water runoff
- selected and refined Best Management Practices (BMPs) from those presented in the parent DAMP

Additional meetings were held to establish timelines and implementation responsibilities. For planning purposes, the BMPs have been organized into two components, as follows:

- Existing Residential and Commercial/Industrial Areas
This component includes education activities, regulatory activities, and other activities that will be performed by municipal agencies to improve and/or adopt new practices to reduce the amount of pollutants entering the municipal separate storm drain system;
- Construction Activity and New Development
This component includes regulatory activities and education activities addressing proper land development and construction site management practices to control storm water pollutants originating from these sources.

In developing BMPs, emphasis is placed on utilizing as many of the existing municipal and regional programs as possible. Information regarding co-permittees' existing programs for residential and commercial/industrial areas as well as programs related to construction and new development are presented. The summary is based on information obtained through a questionnaire circulated to all permittees in May 1992.

From the descriptions of the existing municipal programs, it is apparent that existing municipal programs vary significantly throughout the Santa Ana region. Thus, new and modified BMPs were selected and refined by the permittees to fill in any gaps.

The BMPs selected by the permittees are intended to reduce pollutant loads to the maximum extent practicable. The BMPs are primarily source control/non-structural measures, rather than structural controls since source controls/non structural measures are the least costly to implement and generally the most effective in reducing pollutant contact with storm water.

Structural control measures have been considered as well. However, when more quantitative data is available from the storm water monitoring program currently being conducted in the Santa Ana Region, areas of concern can be targeted for the implementation of feasible on-site and regional structural control features.

The BMPs presented in the SAR-DAMP are grouped together by function where possible for future incorporation into individual storm water management programs by the appropriate implementing permittee. These BMP groups include:

- Environmental Education Activities (E)
- Solid Waste Activities (SW)
- Road and Drainage System Operations and Maintenance (OM)
- Regulatory and Enforcement Activities (R)
- Structural Controls (S) (addressed separately in Section 7.0)

Under the Existing Residential and Commercial/Industrial category, the permittees selected 5 regulatory BMPs, 3 solid waste activity BMPs, 6 operation and maintenance BMPs, and 10 educational BMPs. In the Construction Activity category, 3 regulatory and 1 educational BMPs were selected. In the New Development section, 5 regulatory and 1 educational BMPs were selected. A series of planning actions accompany each BMP as well as the designated implementing committee(s) and implementation schedule.

Funding Sources

The NPDES storm water permit issued by the Santa Ana RWQCB requires a discussion of the funding sources available to implement programs of the SAR-DAMP.

The RCFC&WCD, established a benefit assessment area encompassing the Santa Ana drainage area. In establishing a benefit assessment, the charge imposed on any parcel of property is based on the storm water runoff generated from that parcel. The RCFC&WCD has used this funding source for its fiscal year (FY) 1991-92 and 1992-93 NPDES activities.

Riverside County has established a County Service Area (CSA). In FY 1992-93, the County adopted a flat charge of \$10 per parcel. For FY 1993, the County will utilize a formula used by the RCFC&WCD. Other municipalities' sources include the general fund, city sewer account, annexation to the County's CSA, utility fees, or drainage fees collected from developers.

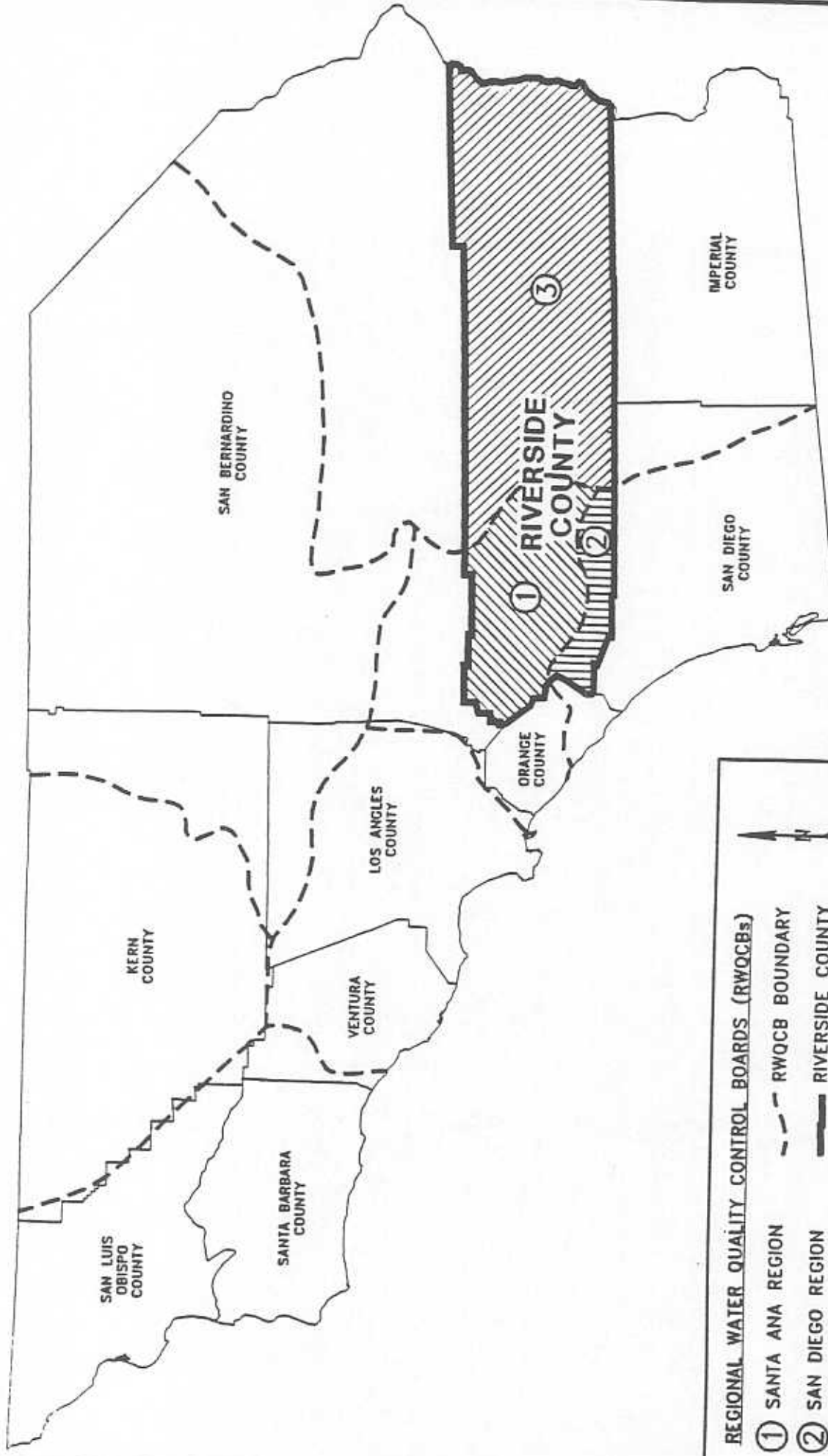
Annual Reporting

The Permit requires annual progress reporting to the RWQCB every year. The annual progress report will assist the RWQCB and the co-permittees in monitoring compliance of the individual SWMPs once they are developed. The annual report will document the compliance activities of the NPDES permit requirements. The SAR-DAMP presents forms which may be used by the co-permittees for reporting their progress in implementing the BMPs chosen for their individual SWMPs. The forms will be compiled on an annual basis by the RCFC&WCD and submitted with the annual progress report to the Santa Ana RWQCB.

Appendices

The appendices to this document contain supplementary information to support the main text. Appendix A contains a glossary of terms used in the text. Appendix B describes the process used in evaluating and planning for BMPs. Appendix C contains copies of written comments received at the public meeting on the DAMP for Riverside County. Appendix D presents

descriptions of existing legal authorities of each co-permittee and a model ordinance for potential adoption by the co-permittees. Appendix E contains the Public Education/Participation Element adapted from the DAMP for Riverside County.



REGIONAL WATER QUALITY CONTROL BOARDS (RWQCBs)

- ① SANTA ANA REGION - - - RWQCB BOUNDARY
- ② SAN DIEGO REGION ——— RIVERSIDE COUNTY
- ③ COLORADO RIVER REGION ——— COUNTY BOUNDARY

NO SCALE

RIVERSIDE COUNTY AND RWQCB REGULATORY AREAS

Project No.: 9151156A

Date: 10-23-92

Project:

RIVERSIDE COUNTY DAMP

Fig.: 1-1

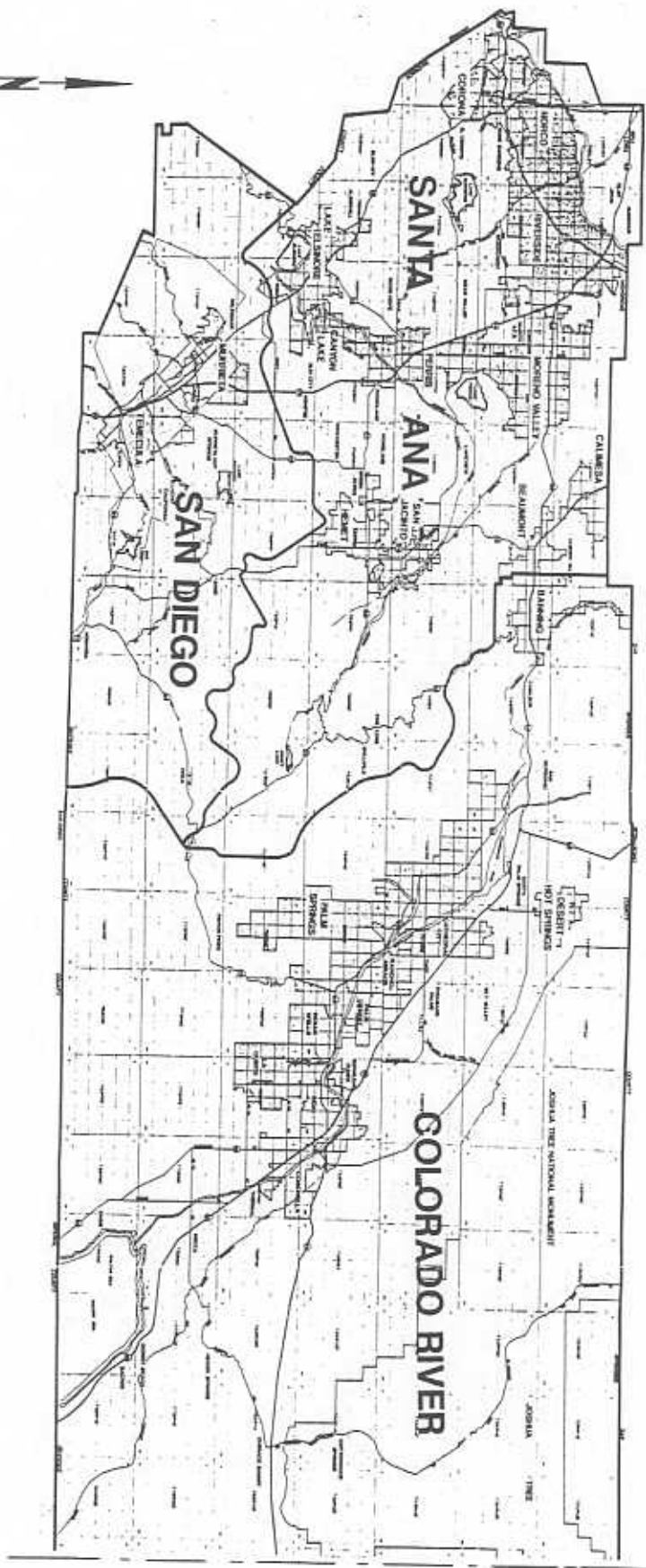
INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The Santa Ana Regional Drainage Area Management Plan (SAR-DAMP) describes the overall storm water management strategies planned by the municipalities in the Santa Ana drainage area of Riverside County. The SAR-DAMP has been prepared to meet the requirements of the NPDES (National Pollutant Discharge Elimination System) storm water permit issued by the Santa Ana Regional Water Quality Control Board (RWQCB) to the municipalities in the Santa Ana drainage area of Riverside County. The SAR-DAMP is a critical intermediate step towards establishing a Storm Water Management Program (SWMP) for the Santa Ana region. A parent document to the SAR-DAMP, titled the Drainage Area Management Plan for Riverside County (DAMP for Riverside County), served as the basis for the SAR-DAMP.

The DAMP for Riverside County, submitted to the Santa Ana RWQCB on November 12, 1992, was prepared to meet the complex storm water quality management needs of Riverside County. Riverside County is comprised of three major drainage areas requiring the involvement of three RWQCBs and 18 permittees. Three regional DAMPs will originate from this parent document. Working from this parent document provides for uniformity and common links between each RWQCB area. The regional DAMPs must address the needs and constraints of the co-permittees and the requirements of the RWQCBs to ultimately result in effective SWMPs. The SAR-DAMP is the first of the three regional DAMPs to be developed.

As stated previously, Riverside County is comprised of three drainage areas regulated by the Santa Ana, San Diego, and Colorado River RWQCBs. These RWQCB areas are shown in Figures 1-1 and 1-2. Figure 1-3 shows the Santa Ana RWQCB area and permittees involved in the Santa Ana Permit. Storm water discharges are regulated through "early" NPDES municipal storm water permits for the Santa Ana and San Diego RWQCB areas. The Colorado River RWQCB area is regulated through the federal municipal NPDES storm water



NO SCALE

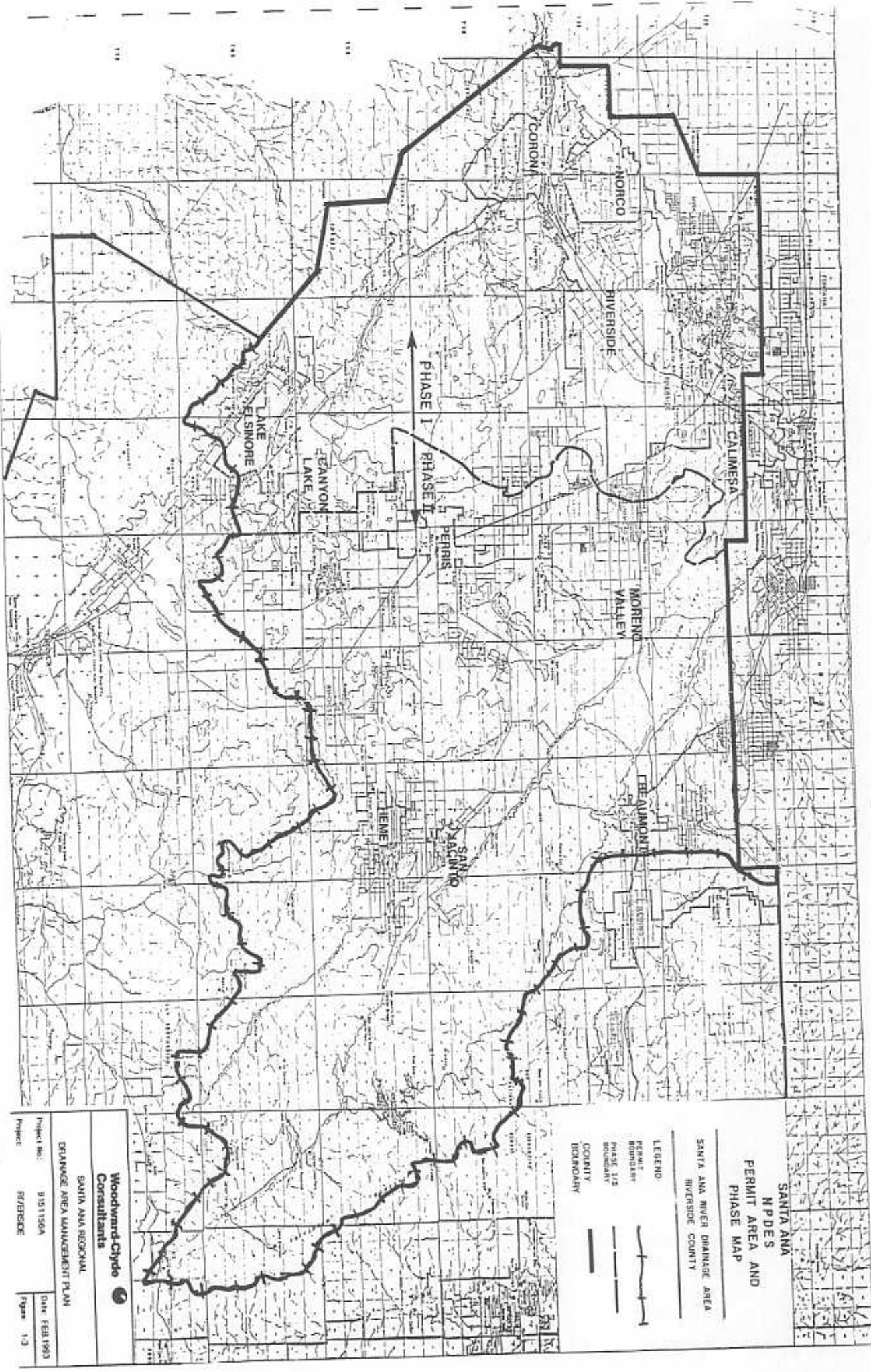
INDICATES STATE WATER QUALITY CONTROL BOARD
REGIONAL BOUNDARY AREAS.

PROJECT AREA MAP
RIVERSIDE DRAINAGE AREA MANAGEMENT PLAN

DRAWN BY: CD	CHECKED BY: JCF	FIGURE NO: 1-2
DATE: 8-13-92	PROJECT NO: 915155A-800	

WINTERBORN PLANE PROJECT 1992

SOURCE: RIVERSIDE COUNTY PLANNING DEPARTMENT, DATED MARCH 1991



**SANTA ANA
NPDES
PERMIT AREA AND
PHASE MAP**

SANTA ANA RIVER DRAINAGE AREA
RIVERSIDE COUNTY

- LEGEND**
- PERMIT BOUNDARY
 - PHASE I/II BOUNDARY
 - COUNTY BOUNDARY

Woodward-Clyde
Consultants

SANTA ANA REGIONAL
DRAINAGE AREA MANAGEMENT PLAN

Project No: 9151156A Date: FEB 1993

Project: RIVERSIDE Page: 1/3

permit program. All three areas have different schedules for developing their DAMPs and SWMPs.

1.2 ORGANIZATION OF THE SANTA ANA REGIONAL DAMP

The SAR-DAMP provides the guidance necessary to implement the SWMP for the Santa Ana region. It provides a description of specific Best Management Practices (BMPs) to be implemented by the permittees to reduce contaminant loads in storm water runoff. For planning purposes, these BMPs have been organized into two components, as follows:

- Existing Residential and Commercial/Industrial Areas
This component includes education activities, regulatory activities, and other activities that will be performed by municipal agencies to improve and/or adopt new practices to reduce the amount of pollutants entering the municipal separate storm drain system;
- Construction Site and New Development
This component includes regulatory activities and education activities addressing proper land development and construction site management practices to control storm water pollutants originating from these sources.

Section 1.0 of this document provides the background information related to the development of the SAR-DAMP. Specifically, the section includes a description of the Riverside County permitting process, the DAMP for Riverside County, the project area and regional water bodies, the objectives of the SAR-DAMP, and the BMP selection, and schedules for implementation process, public involvement process and annual reporting requirements.

Section 2.0 provides an overview of water quality issues and priorities for action in the Santa Ana region.

Section 3.0 focuses on existing residential and commercial/industrial areas. The section includes a discussion of existing activities and programs that prevent pollutants from these areas from entering the storm water drainage system, followed by a description of new/modified activities and programs to provide further control of pollutants.

Section 4.0 addresses Construction Sites and New Development. The section describes existing activities and programs to prevent pollutants associated with construction activities and new development from entering the storm drain systems, and is followed by a description of new/modified activities and programs to provide further control of pollutants.

Section 5.0 is a brief discussion of the funding sources available by the permittees of the Santa Ana region to implement programs of the SWMP.

Section 6.0 describes the annual reporting requirements as determined by the Santa Ana permit, and provides example reporting forms that may be adapted for use by the permittees for reporting their progress in implementing the SWMPs.

Section 7.0 is a discussion of structural controls. The need and location for structural controls in existing areas will be determined based upon an evaluation of quantitative data from the storm water monitoring program.

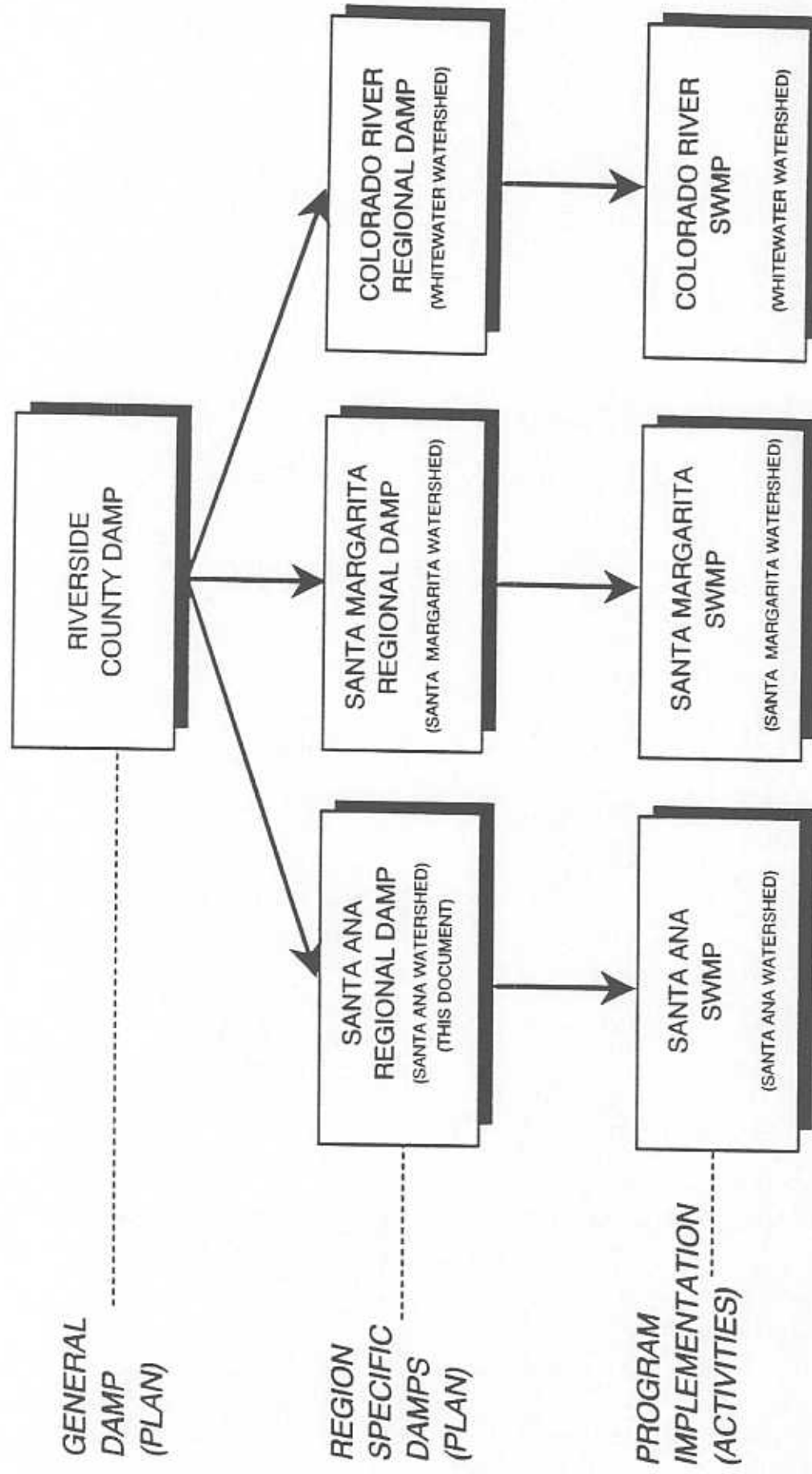
The appendices to this document contain supplementary information to support the main text. Appendix A contains a glossary of terms used in the text. Appendix B describes the process used in evaluating and planning for BMPs. Appendix C contains copies of written comments received at the public meeting on the DAMP for Riverside County. Appendix D presents descriptions of existing legal authorities of each co-permittee. Appendix E contains the Public Education/Participation Element adapted from the DAMP for Riverside County.

1.3 OVERVIEW OF THE SAR-DAMP DEVELOPMENT PROCESS

The SAR-DAMP was developed from the DAMP for Riverside County as shown in the flowchart in Figure 1-4. The DAMP for Riverside County has been tailored for the Santa Ana region by considering the resources, needs, opportunities, constraints, regulatory requirements and compliance timelines specific to the Santa Ana region and the Santa Ana NPDES Storm Water Permit.

The flowchart in Figure 1-5 illustrates the SAR-DAMP development process from the time of submittal to the Santa Ana RWQCB (November 12, 1992), through completion of the SWMP Implementation Manual. The manual will be used to direct permittees in implementing their SWMPs.

STORM WATER MANAGEMENT PROGRAM DEVELOPMENT

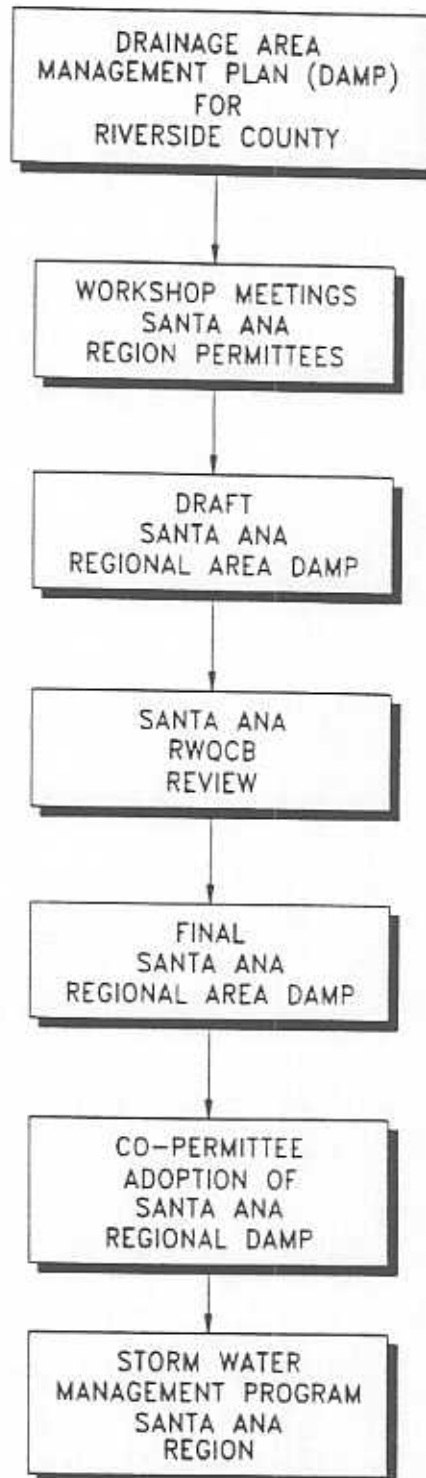


KEY:
 DAMP - DRAINAGE AREA MANAGEMENT PLAN
 SWMP - STORM WATER MANAGEMENT PROGRAM

(SWMPO)

FIGURE 1-4

SANTA ANA REGIONAL DAMP DEVELOPMENT PROCESS



Workshops were held in January and February 1993, attended by the permittees of the Santa Ana region, to provide direction in the creation of the SAR-DAMP by tailoring the DAMP for Riverside County. At the workshops, the permittees selected and refined BMPs from those presented in the parent DAMP, established objectives, identified water quality concerns and perceived sources of storm water pollution. Further meetings were held to establish timelines and implementing committees/agencies.

The BMPs listed in the SAR-DAMP are viewed by the permittees as general planning guidelines for implementing the SWMP. Programs of the SWMP will be implemented individually by each co-permittee.

1.4 REGULATORY FRAMEWORK

1.4.1 Background Re: Federal NPDES Storm Water Regulations

In 1987, Congress enacted the Water Quality Act which amended portions of the Clean Water Act (CWA) and set requirements for permitting storm water runoff. Section 402(p) of the CWA requires that the EPA establish regulations setting forth a program of NPDES applications and corresponding permits for storm water discharges from industrial sources and municipal separate storm drain systems. EPA published its draft regulations in December 1989 for review and comment. The Final Rule for NPDES Permit Application Regulations for Storm Water Discharges was published on November 16, 1990, and became effective December 17, 1990. The regulations are administered nationwide through EPA's existing NPDES program. The Rule specifies who is covered by the regulations; prescribes a variety of required information-gathering, planning, and reporting activities; and sets forth a schedule for compliance with the two-part permit application requirements. The Rule also sets forth specific application requirements for identified industries.

1.4.2 NPDES Permitting in California

In most states, including California, the NPDES permitting program is administered at the local (state) level, rather than by EPA, itself. Within California, NPDES permitting authority is through the State Water Resources Control Board (SWRCB) and its nine

RWQCB. The authority for designating local administrative control comes from the Porter-Cologne Act.

1.4.3 "Early" Permitting in California

Prior to EPA's publishing of the final Rule, representatives from EPA's Region IX office and the SWRCB worked with many local municipal agencies (especially in Southern California) and encouraged them to seek NPDES Storm Water Permits before the final regulations were officially made effective. The objective was to give the municipal agencies (as permittees) and the respective RWQCBs the flexibility to tailor the permits to conditions in California. It was also seen as a means for getting many "early" BMPs in place promptly, rather than waiting for 2 or more years.

1.4.4 Overview of Santa Ana Region NPDES Permit

In May 1990, the RCFC&WCD and the County of Riverside joined with the cities of Beaumont, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto to prepare and submit an early NPDES permit application for an area-wide storm water discharge permit for the Santa Ana region of the County. An "early" permit was issued to them in July 1990 by the Santa Ana RWQCB. On July 10, 1992, the cities of Calimesa and Canyon Lake were added to the Permit. The RCFC&WCD has been designated lead permittee and the remaining 11 municipalities plus the County are considered co-permittees².

Due to the large number of water bodies in Riverside County, the Santa Ana RWQCB established priorities for the water bodies in the development and implementation of the SWMP. The SWMP for the Santa Ana region is to be developed and implemented in two phases. In Phase I, permittees are required to submit existing qualitative data on storm water and to develop storm water management and monitoring programs for those water bodies where beneficial uses are threatened or impaired due to storm water runoff and urban

² "Permittees" refers to the RCFC&WCD plus the 11 municipalities and the County.
"Co-permittees" refers only to the 11 municipalities and the County (excludes reference to the RCFC&WCD - the lead permittee).

nuisance water discharged via storm water systems. The water bodies included in Phase I are Reaches 3 and 4 of the Santa Ana River, Prado area streams, a portion of San Gabriel Mountain streams (Valley Reaches), Lake Evans, Lee Lake, Lake Mathews, Lake Elsinore, Lake Norconian, Mockingbird Reservoir, and Canyon Lake. In Phase II, the same activities identified above are required for the remaining water bodies, which include the San Jacinto River and its tributaries, San Timoteo Creek and its tributaries, Lake Perris, Lake Fulmor and Lake Hemet. Figure 1-3 depicts the Phase I and II boundaries within the Santa Ana region.

1.4.5 Specific Requirements of the Santa Ana Region NPDES Permit

As part of an effort to reduce pollutants in storm water, municipal permittees are required to implement a SWMP. The SWMP will include monitoring of storm water runoff, efforts to identify and eliminate illegal discharges/illicit connections to the storm drain system (reconnaissance survey), identification and implementation of BMPs (which include development of public education programs), a description of the permittees' legal authorities and staff/equipment needs for implementing SWMP, fiscal analysis of capital expenditures necessary to implement the SWMP, a data analysis program for storm water monitoring, and annual program analysis and reporting. Several of these items required by the permit have been prepared separately from the SAR-DAMP and are on file with the RCFC&WCD.

1.4.6 Roles and Responsibilities

The responsibilities of the lead permittee and co-permittees are outlined in the early NPDES permit that was issued by the Santa Ana RWQCB. A formal NPDES Storm Water Discharge Permit Implementation Agreement for the Santa Ana Region was entered into on November 19, 1991 by the RCFC&WCD, Riverside County, and the cities of Beaumont, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto. An amendment to the Implementation Agreement dated January 12, 1993 added the cities of Canyon Lake and Calimesa to the Implementation Agreement. The defined roles and responsibilities address all elements of the NPDES permit, including provisions for implementation of the regional DAMPs.

Under the terms of this agreement, the lead permittee is required to do the following:

- ✓ • Prepare the budgets and reports; subject to review by the co-permittees
- Comply with the responsibilities of the principal permittee as stated in the permit
- Provide the hydrologic related portions of the Existing Information and Data Report
- Provide existing data for RCFC&WCD facilities for all reports
- ✓ • Perform a Reconnaissance Survey and inspection for RCFC&WCD facilities
- ✓ • Develop the Drainage Area Management Plan and Implement BMPs for RCFC&WCD facilities
- ✓ • Perform the storm water and receiving water monitoring
- Perform the requirements for the Data Analysis, Program Analysis, Reporting, and the Expiration and Renewal sections of the Permit

Also under terms of the agreement, each permittee is responsible for the management of the program within its respective jurisdiction, including the following:

- Provide information and data for the Existing Data and Information Report, DAMP and Reconnaissance Survey
- Assist in developing, reviewing approving and implementing the Reconnaissance Survey and DAMP.
- Provide information needed for budgets, analysis and other reporting requirements of the Permit.
- Comply with the Permit section for the Responsibilities of the Co-permittees and general requirements.

To carry out many of these responsibilities, committees have been established consisting of permittees of the Santa Ana region. Several of these committees have already been meeting regularly in order to plan and implement many of the storm water programs including preparation of the DAMP for Riverside County. Four of these committees will be responsible for implementing BMPs outlined in the SAR-DAMP. These committees include

① the NPDES Advisory Committee, ② the Construction and New Development Advisory Committee, ③ Household Hazardous Waste Committee and the ④ Public Education/Participation Committee. In Sections 3.0 and 4.0, the BMPs are presented including references to the specific committee(s) responsible for the BMP implementation.

1.5 SANTA ANA DRAINAGE AREA DESCRIPTION

RCFC&WCD's jurisdiction in the Santa Ana RWQCB area encompasses an area of approximately 1,300 square miles and serves a population of approximately 0.8 million. Approximately one-quarter of Riverside County drains into water bodies within the Santa Ana RWQCB area. Storm water discharges from urbanized areas within the Santa Ana RWQCB area consist mainly of surface runoff from residential, commercial and industrial development. Although not regulated by this permit, agricultural land uses, including dairies, contribute storm water discharges to the Santa Ana region's surface waters.

1.6 OBJECTIVES OF THE SAR-DAMP

The SAR-DAMP was prepared to address the requirements of the permit issued by the Santa Ana RWQCB. At the workshop meetings, attended by the Permittees of the Santa Ana RWQCB area, general objectives for the SAR-DAMP were established based upon those listed in the parent DAMP for Riverside County. The objectives are as follows:

- Reduce total loads and concentrations of pollutants
- Protect existing surface and groundwater from further degradation
- Focus on those pollutants for which a reasonable degree of program implementation will yield significant improvements
- Focus the program where there are known problems
- Employ control measures which have been shown to be cost-effective, reliable, and sustainable
- Employ control measures that have been shown to have minimal attendant environmental side effects, are generally acceptable to the public, and will not introduce significant risks to public health or safety

- Implement the plan in a series of well-defined phases
- Address future growth-related issues regarding water quality
- Focus on urbanized and urbanizing areas
- Enhance public awareness of water quality problems
- Prioritize implementation measures based on meeting multiple objectives, including those outside the scope of the SAR-DAMP (recreational areas, open space, wildlife habitat, flood control, etc.)
- Coordinate with adjacent jurisdictions if beneficial
- Address the needs of specific geographic regions within the project area
- Meet regulatory requirements
- Avoid fines/litigation
- Avoid public controversy

1.7 SAR-DAMP DEVELOPMENT PROCESS

Developing the SAR-DAMP has brought attention to the importance of "process". A series of critical steps is necessary to establish and implement an effective SWMP for the Santa Ana RWQCB area. As mentioned in Section 1.3, the creation of the DAMP for Riverside County was the first step. The creation of the SAR-DAMP is the second critical step since it is tailored to the needs and constraints of the Santa Ana region. The list of BMPs have been refined by the permittees, and schedules for their implementation have been identified. The development of SAR-DAMP has moved the region closer to the ultimate goal of implementing an effective SWMP.

1.7.1 BMP Development, Selection and Schedule

At the workshop meetings held in January and February 1993, BMPs originally listed in the DAMP for Riverside County were evaluated and selected for possible inclusion in the SAR-DAMP. The permittees evaluated those BMPs judged to be most appropriate to conditions in the Santa Ana region, and formulated a practical implementation plan by following a 19-

step process, which is summarized in Table 1-1 and described more fully in Appendix B. The process employed professional judgement and a certain degree of subjectivity, but the prescribed evaluation and selection process was followed rigorously and the steps are documented so others can review the work, evaluate the results, and follow a similar process in the future. This process provided an objective format for the selection of the BMPs in the SAR-DAMP. Each permittee has now committed to the BMPs and the associated implementation schedule contained in this SAR-DAMP.

Each permittee has had the opportunity to participate in selecting specific BMPs from the parent DAMP. The permittees have agreed upon schedules for implementation which is included in the SAR-DAMP. The SAR-DAMP will be submitted to the Santa Ana RWQCB for review and approval on February 12, 1993. Approvals by the co-permittees' City Councils/Board of Supervisors is not required at this stage.

At the time the SAR-DAMP is finalized by the RWQCB, the permittees will move forward on the planning actions required to implement BMPs as specified in the approved SAR-DAMP (ie, review existing ordinances, start planning a pilot program, etc.). These planning actions will occur following the schedule in Figure 1-6. In some cases, approvals must be sought by the permittees' City Councils/Board of Supervisors in order to secure funding, pass ordinances, etc.

Implementation of the BMPs will take place regionally and will include active participation by various permittee committees and a commitment to contribute to collective regional-scale activities and BMPs, in addition to the permittees' own individual efforts.

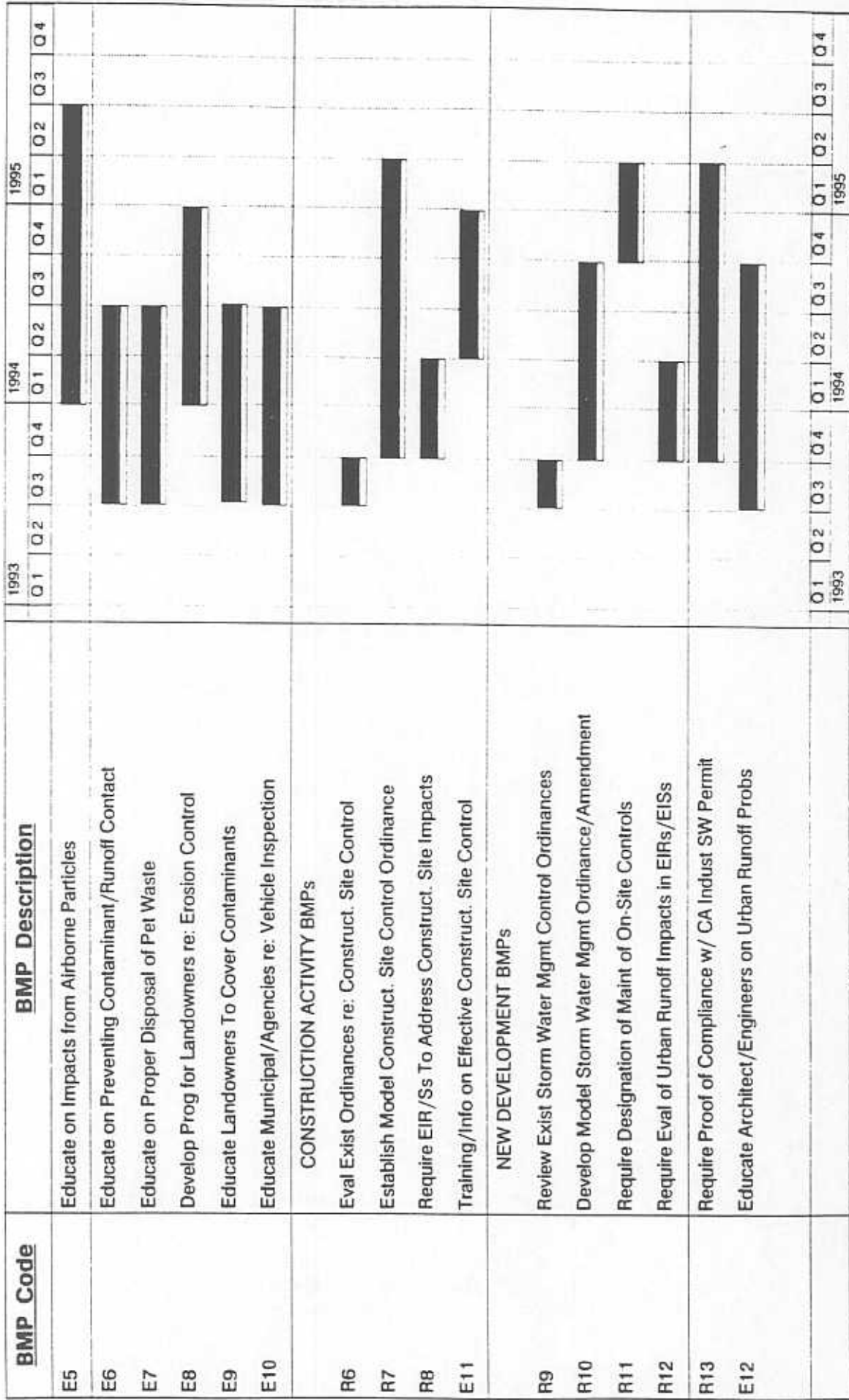
1.7.2 Implementation of a SWMP

The SWMP will consist of the implementation of a series of well defined activities to improve storm water quality in the Santa Ana RWQCB area. While the SAR-DAMP serves as the guidance for the actual implementation of the BMPs programs, the SWMP constitutes the actual implementation. The SWMP is not a document, but rather is an ongoing series of programs and actions to be carried out throughout the life of the Permit (ie, the actual enforcement of a new ordinance, the stenciling of catch basins, the increasing of street

TABLE 1-1
OVERVIEW OF BMP EVALUATION AND PLANNING PROCESS

-
1. Engage the right people.
 2. Educate/inform the decision makers.
 3. Define the water quality problems in practical (human/societal) terms, quantitatively and/or qualitatively.
 4. Establish priorities (Which problems do we address now? What level of improvement do we want to achieve?).
 5. Establish objective(s) that reflect the priorities.
 6. Translate the objectives into factors to be considered.
 7. Prioritize these factors to reflect local conditions.
 8. Define "practicable."
 9. Nominate candidate best management practices (BMPs).
 10. Sequentially screen the candidate BMPs.
 11. Evaluate (score) the candidate BMPs by filling in matrix.
 12. Document the process and results.
 13. Aggregate the selected BMPs into groups that will facilitate this explanation/implementation.
 14. Establish timing for the various implementation phases for each BMP element and/or each group of BMPs.
 15. Establish permittees' roles and responsibilities.
 16. Describe how the above will be implemented.
 17. Allocate annual budget amounts for the selected BMP elements.
 18. Review existing programs and adjust the assigned dollars to reflect the difference between "new" budget increments and "old" budget items.
 19. Decide who will pay from what funding sources.
-

BMP Code	BMP Description	1993				1994				1995				
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
R1	EXISTING RESIDENTIAL/COMMERCIAL/INDUSTRIAL BMPs Legal Authority To Eliminate Cross-Connections Regs To Prevent Improper Disposal of Pollutants Leash Law/Prohibit Pets in Selected Public Areas Evaluate Need for Oil/Grease Control Regs													
R2														
R3														
R4														
R5	Develop Regs: No Rooftop Connection to Drain Syst Litter Receptacles in Strategic Public Areas Legal Authority To Control Littering Continue/Expand HHW Programs													
SW1														
SW2														
SW3														
OM1	Continue Prog To Detect/Prevent Illegal Dumping													
OM2	Pilot Prog To Test/Remove/Disp Sediment in Basins Program To Record Observations of Field Personnel Intensified Street Sweeping Programs Evaluate Pavement Repair/Maintenance Program Develop Contingency Plan for Restoring Eroded Land													
OM3														
OM4														
OM5														
OM6														
E1		Educate on Pesticide/Fertilizer/Herbicide Use												
E2	Educate on Impacts of Littering/Improper Disposal													
E3	Educate on Impacts from Illegal Dumping													
E4	Educate on Impacts from Gasoline, Oil, Etc.													
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
		1993				1994				1995				
		Legend												
		R = Regulatory and Enforcement Activity												
		SW = Solid Waste Activity												
		OM = Road & Drainage Operations & Maintenance												
		E = Educational Activity												
Prepared for RCFC & WCD		BMP DEVELOPMENT SCHEDULE												
Printed on 03/19/93		Santa Ana Regional DAMP												
Figure 1-6														
Woodward-Clyde Consultants														



Legend

R = Regulatory and Enforcement Activity
 SW = Solid Waste Activity
 OM = Road & Drainage Operations & Maintenance
 E = Educational Activity

BMP DEVELOPMENT SCHEDULE
Santa Ana Regional DAMP

Prepared for RCFC & WCD

Printed on 03/19/93

Figure 1-6

Woodward-Clyde Consultants

sweeping etc.). When the Permit is up for renewal, the SWMPs may need to be modified.

1.7.3 SAR-DAMP Schedule

The SAR-DAMP will be submitted on February 12, 1993 to meet the Santa Ana RWQCB's requirements. Implementation of the activities and programs will occur thereafter according to schedules specified in the SAR-DAMP.

1.8 PUBLIC INVOLVEMENT PROCESS

In order for the SAR-DAMP to be an effective planning tool for reducing pollutants in storm water, it is essential to educate both the general public and permittees staff on the need for, purpose and implementation of the programs outlined in the SAR-DAMP. The educational process has two key components.

The first component is the detailed education and training of RCFC&WCD and permittee agency staff on the purpose, requirements and implementation of the programs outlined in the SAR-DAMP. The second component of this educational process will be education/participation of the general public. The public participation program will integrate public values into the planning, decision-making, and problem-solving process. Under a public participation approach, interested and affected persons will be afforded opportunities to influence the planning and decision-making process prior to the identification of a recommended solution. The great strength of this approach is its ability for developing solutions to public-sector problems that are much more likely to be acceptable to the public and therefore implementable.

In order to promote public understanding of the DAMP, a public meeting was held on January 6, 1993 to discuss the final DAMP for Riverside County. At this meeting, a presentation was made to inform the public on the purpose, need and process of DAMP. One goal of the public meeting was to gain widespread public understanding and support for each region's DAMP, without which implementation of an effective SWMP would not succeed. The written comments received at the meeting are included in Appendix C.

A key element of the public education/participation program is the establishment of a "Public Education/Participation Committee" to provide guidance in developing effective public education/participation programs. The committee will be dedicated to planning educational and training BMP programs outlined in SAR-DAMP. Appendix E is the Plan for Public Education/Participation that was included in the DAMP for Riverside County. This has been reproduced for the SAR-DAMP to be used as a tool for effectively implementing the educational BMPs outlined in the SAR-DAMP. This plan for public education/participation has a County-wide focus since many of the educational BMPs are aimed at broad-scale public awareness. Thus, it is hoped that the Public Education/Participation Committees from each different regional area within the County can work collectively in implementing many of the educational BMPs.

1.9 ANNUAL REPORTING

Upon approval of the SAR-DAMP by the Santa Ana RWQCB, the RCFC&WCD will be responsible for preparing and submitting annual permit compliance reports including proposed amendments to the SAR-DAMP. In addition to ensuring compliance with the permits, the annual report will allow the RCFC&WCD and the co-permittees to track and evaluate the progress of activities specified in the SAR-DAMP to ensure the objectives and commitments are being met. A single comprehensive annual report will be submitted to the Santa Ana RWQCB which will contain a section to describe permittee activities performed as a group and a section for each permittee to describe its own respective activities.

2.0

EXISTING WATER QUALITY PROBLEMS AND IMPROVEMENT PRIORITIES

2.1 INTRODUCTION

Storm water discharged to storm drain systems in Riverside County ultimately flows to various water bodies (inland surface streams, lakes and reservoirs) of the state. The Santa Ana RWQCB has determined that the major surface water bodies in the Santa Ana drainage basin for which storm water management programs should seek to protect include:

Lakes and Reservoirs

- Lake Elsinore
- Lake Hemet
- Lee Lake
- Lake Evans
- Lake Fulmor
- Lake Perris
- Lake Mathews (which will have its own urban water quality plan),
- Lake Perris (minimal drainage area under control of State),
- Canyon Lake,
- Lake Norconian (under federal control)
- Mockingbird Reservoir

Rivers and Streams

- Santa Ana River (Reaches 3 and 4)
- Prado Area streams
- San Gabriel Mountain streams (Valley reaches)
- San Timoteo Creek and its tributaries
- San Jacinto River and its tributaries

The beneficial uses of these water bodies include municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and preservation of rare and endangered species. The ultimate goal of the SAR-DAMP is to protect the beneficial uses of the receiving waters.

Existing water pollution problems are largely attributable to the everyday activities of the people who live, work, and play in the Santa Ana region. The infrastructure that supports people's activities (e.g., roads, parks, storm drainage system, wastewater collection and treatment facilities) may also contribute to water quality problems documented or observed in the County.

Because Riverside County is so large and has so many land uses, the water quality problems vary greatly. Land uses range from residential, commercial, and industrial to mining, agriculture, stockyards, and dairies. Each land use can potentially cause point and non-point source pollution in nearby streams, rivers, and lakes. Presently it is not known what percentage of the pollution in the Santa Ana region water bodies is attributable to urban storm water runoff. Other types of storm water runoff, including agricultural storm water runoff, are exempt from the requirements of the NPDES storm water permit program.

2.2 OVERVIEW OF URBAN STORM WATER POLLUTION

Many storm water runoff problems are primarily a consequence of urbanization. As the natural landscape is covered over with pavement or buildings, the amount of water-absorbing or pervious surface decreases. Water that previously soaked into the ground, removing pollutants by filtering through soil, and eventually replenishing groundwater supplies, now must flow overland and therefore enters local streams more rapidly. The rapid transport of the water increases the erosion of stream banks and hillsides and does not permit filtering of pollutants. Sediment carried by storm water runoff can build up in streambeds, harming fish and aquatic habitat. The sediment acts as a transport mechanism for pollutants which adhere to the soil particles. Because of the decreased amount of water absorbed into the ground in urban areas, groundwater supplies also diminish.

Urban storm water runoff typically carries pollutants that originate from dispersed and uncontrolled sources. These types of pollutants are carried in surface water runoff, and eventually enter surface water bodies. Examples of urban pollutants are oil and grease washed from roadways by storm water runoff, or fertilizer from residential gardens washed into storm drains during rain events. These pollutants ultimately drain to the regional receiving waters listed previously. Typical urban runoff pollutants found in surface waters include heavy metals, nutrients, petroleum products, sediment, bacteria, chemicals, and litter.

Table 2-1 lists general urban storm water runoff pollutants of concern, the characteristic indications of the presence of pollution (indicators), and the possible effects and probable causes of the pollution. Not all the pollutants listed are known to cause significant problems in Riverside County, but the overview illustrates both the diverse nature of urban storm water runoff pollution and the fact that many water quality problems are a direct result of people using unwise or illegal practices in their everyday activities. Minor changes in the behavior of residents and businesses, proper drainage management practices by public agencies, and enforcement of water quality regulations can help to decrease urban storm water runoff pollution and improve water quality.

2.3 OVERVIEW OF AVAILABLE WATER QUALITY DATA

RCFC&WCD has an active surface water quality and quantity monitoring program in the permit area. This monitoring program includes 19 water quality monitoring sites, 11 continuous stream gaging stations, six crest stage gaging stations, and 51 automatic precipitation monitoring stations. Water quality sampling is performed quarterly (January, April, July, and October) under dry-weather conditions, and during three storms (at 9 sites). Samples collected are analyzed for constituents including biochemical oxygen demand (BOD), hardness, specific conductance, pH, and concentrations of nutrients, nitrates, metals, minerals, and total filtrable residue. Most of the water quality monitoring stations are located in storm drain systems within the Santa Ana River drainage area.

The Orange County Environmental Management Agency, San Bernardino County Flood Control and RCFC&WCD have formulated a tri-county storm water monitoring program which has been accepted by the Santa Ana RWQCB. Under this program each County

**TABLE 2-1
OVERVIEW OF URBAN RUNOFF POLLUTION**

Urban Runoff Pollutant	Indicators	Possible Effects	Probable Causes
Decaying Organic Materials, Chemicals	Biochemical Oxygen Demand (BOD), Dissolved Oxygen	Fish and eggs stressed by lack of oxygen during storms	Too much fertilizer. Decaying organic debris. Dumping chemical products in storm drains.
Heavy Metals	Arsenic, Cadmium, Copper, Nickel, Lead, Zinc	Fish stressed during storms, accumulated metals in fish	Copper and lead pipes. Vehicle residue on streets (from tires, brakes, and fluids).
Pesticides Toxic Organics	Organic Chemicals	People exposed to potential health hazards. Stressed fish.	Improper use of fertilizers and pesticides. Improper clean-up, or dumping these products down storm drains.
Oil and Grease	Oil and Grease	Reduced enjoyment of creeks. Stressed fish	Dumping oil down storm drains. Vehicle emissions and/or leaks.
Nutrients	Total Phosphorus, Phosphate, Total Nitrogen Ammonia Nitrate	Promotes algae blooms, could result in oxygen depletion.	Too much fertilizer. Dumping products in storm drains.
Sediments and Other Solids	Total Suspended Solids, Turbidity	Interferes with fish respiration, spawning. Contaminant transport. Unappealing appearance during storms.	Increased erosion in streams and on hills from high storm flows, caused by increased impervious surfaces. Also is a natural process.
Bacteria	Fecal Coliforms, Enterococci	Potential health hazards to humans if they drink creek water or eat fish or shellfish from creeks.	Improper disposal of pet wastes. Decaying organic litter (leaves, litter, yard waste) in storm drains, sewer overflows.
Floatables	Leaves, Litter	Reduced enjoyment of creeks. Potential reduced investment of the community in the creek.	Littering. Yard waste, decaying leaves, animal wastes.
Airborne Gases	Odor	Reduced enjoyment of creeks. Potential reduced investment of the community in creek watershed.	Dumping oil and other chemicals down storm drains. Vehicle emissions and/or leaks.

monitors their assigned land uses, contributing the data for each others use. Some of the proposed monitoring sites listed in RCFC&WCD's existing monitoring program (April 1992) have been modified.

The dry-weather quarterly sampling done by RCFC&WCD indicates that the pollutant concentration levels are mainly within the water quality objectives designated by the RWQCB. Exceptions are BOD, hardness, and nitrates for some of the samples. At times however, dry-weather monitoring has indicated that certain heavy metals concentrations (including lead, copper, manganese, and zinc) exceed RWQCB water quality objectives.

Other water quality data for surface and subsurface water bodies are available from reports issued by the California State Department of Water Resources and from the Santa Ana RWQCB. Information from these other agencies indicate that streams and lakes in the Santa Ana RWQCB area are impacted by pollutants from non-point sources, which cause a degradation of water quality. For example, dairies have been found to contribute large loads of total dissolved solids (TDS) and nitrates to groundwater aquifers, and high levels of organic contaminants have been found in them. High fecal coliform levels have been found in surface water bodies in Riverside County. Further, some of the smaller lakes in the regional area have been found to have heavy metal concentrations above acute toxic levels, and have been found to have problems with sedimentation.

Lack of specific information about storm water quality in the Santa Ana region makes it difficult to reach conclusions about specific water quality degradation problems due to urban storm water runoff. However, the RCFC&WCD is implementing a storm water quality monitoring plan to sample storm water and receiving waters as part of its compliance program for the NPDES storm water permit.

2.4 PRIORITIES FOR ACTION

When evaluating potential control measures, it is important to understand the water quality problems qualitatively, if not quantitatively, to establish priorities for action. The permittees worked together to understand the problems and to set realistic priorities to ensure that their BMPs would have maximum effect. The general problems identified and described below assisted permittees in prioritizing and selecting BMP control measures.

- Pollutants washed from urban and rural surfaces: This widespread problem contributes many pollutants to the streams and lakes in Riverside County, including sediment, bacteria, heavy metals, pesticides, and nutrients.
- Illegal dumping into and near storm drains (e.g., oils, paints, and other chemicals as well as the illegal dumping of green (yard/landscaping) wastes): Common human activity such as disposing of used oil in a street gutter can have a significant and direct adverse impact on water quality and may be an important contributor to pollution in Riverside County. Also, decomposing green wastes (from the improper disposal of yard and landscaping wastes) can contribute to increased levels of fecal coliform bacteria and reduce the availability of dissolved oxygen in the waters of the Santa Ana region.
- High percentages of impermeable surfaces in urban areas: Urban storm water runoff volumes and pollutant loads can increase with the construction of buildings and expansion of paved areas. Impermeable (hard, non-porous) surfaces such as pavement and rooftops serve to increase the volume and velocity of storm water, contributing to increased erosion and transport of pollutants downstream. Impermeable surfaces also decrease the amount of water supplied to the groundwater system.
- Erosion of slopes due to natural conditions, increased runoff, or concentrated flow: The steep slopes in the rural mountainous watersheds of Riverside County and some of the less steep undeveloped areas are potential sources of sediment due to erosion resulting from both natural characteristics of the soil the semi-arid/arid form of ground cover, and storm drainage from rural human activities.
- Improper use and difficult enforcement of erosion control measures on construction sites: During construction, sediment and pollutants can be washed into the drainage systems if proper construction practices are not followed.
- Improper management of animal waste in rural areas: Animal livestock in the rural areas of Riverside County, including dairies, contribute bacteria and other pollutants to receiving waters from uncontrolled animal manure.

2.4.1 Prioritized Water Quality Indicators

Based on their experience, the Santa Ana region permittees have prioritized the following list of urban runoff pollutant indicators of most concern to them and identified their perceived sources of most of these pollutants:

<u>Pollutant/Water Quality Indicator</u>	<u>Perceived Source</u>
Oxygen-demanding substances (BOD)	Residential, agriculture, semi-rural activities, dairies
Heavy Metals	Industrial plating, agriculture, transportation, illegal dumping
Pesticides/herbicides	Agriculture, golf courses, parks, schools, commercial and residential developments
Oil and grease	Transportation, industry, airports, illegal dumping, construction activities
Phosphates/nitrates (nutrients)	Fertilizers, animal yards, animal wastes, human waste (failing septic systems)
Settleable solids	New construction, agriculture, stream bank erosion
Total dissolved solids (TDS)	Animal feed lots, industry, fertilizers, agriculture (dairies)
Total suspended solids (TSS)	Erosion from wind and water
pH	All sources
Volatile organic carbon (VOC)	Industry, household hazardous wastes
Pathogens	Failing septic systems, illegal connections, animal wastes
Debris	Littering, illegal dumping of green wastes

More quantitative information about these pollutants will be available once the data from the monitoring activities are compiled and analyzed. This data will help characterize areas of concern within the Santa Ana drainage basin so that future storm water quality management programs can focus on these areas.

* All perceived sources include illegal dumping

2.4.2 Actions to Reduce Storm Water Pollutants

The permittees developed the following series of action items needed to control pollutants entering storm water runoff in Riverside County. All action items have been given equally-weighted high priority status. These items provided direction for selection of BMP control measures:

- Change the public's habits that result in pollution of the surface waters.
- Increase coordination and enforcement of the existing laws and regulations that are designed to prevent water pollution.
- Develop improved regulations where deemed necessary.
- Maximize government agency coordination and efficiency.
- Look for public works projects to reduce water quality degradation, where appropriate.
- Stay vigilant by monitoring the health of the water bodies in the Riverside County and downstream areas.

3.1 INTRODUCTION

All of the co-permittees in the Santa Ana region routinely conduct activities that reduce or prevent pollutants from entering their storm drain systems. The activities and programs are performed through public works, fire, community services, parks, recreation, and/or other departments. These are the departments that are usually responsible for engineering, construction, operations and maintenance, and repair activities within their respective jurisdictions. The objective of the control plan for existing residential and commercial/industrial areas is to improve municipal government activities and/or adopt new activities and procedures to reduce the amount of pollutants entering the storm drain system. Generally, the most cost effective control strategy is to build on existing programs and activities when possible.

This section describes the best management practices (BMPs) and programs that are being proposed for implementation by RCFC&WCD and the co-permittees. The process used to select the BMPs was described in Section 1.6.1. Descriptions of BMPs currently employed by the municipalities of the Santa Ana Region are described in this section.

The BMPs are grouped together by function where possible for future incorporation into individual SWMPs by the appropriate implementing permittee. These BMP groups include:

- Environmental Education Activities (E)
- Solid Waste Activities (SW)
- Road and Drainage System Operations and Maintenance (OM)
- Regulatory and Enforcement Activities (R)
- Structural Controls (S)

3.2 PERMIT REQUIREMENTS

Requirements for implementing BMPs in existing residential and commercial/industrial areas as stated in the NPDES Storm Water permit issued by the Santa Ana RWQCB are:

Section VI (1)(a)(b)(i)(ii)(iii)(iv)(v)

*(a) A brief description of the existing BMPs and storm water management programs.
(b) Proposed modifications to the existing BMPs and storm water/urban runoff management programs to reduce pollutants in the storm water discharges from industrial, commercial, and residential areas to the maximum extent practicable. At a minimum, the following shall be considered in developing the BMPs:*

Structural Controls

(i) For the permitted area, wherever appropriate, structural controls such as first flush diversion, detention/retention basins, infiltration trenches/basins, porous pavement, oil/grease separators, grass swales, wire concentrators, etc. Engineering and design modification of the existing structures should also be considered.

Non-Structural Controls

(ii) Programs to educate the public on proper disposal of hazardous/toxic wastes. These may include public workshops, meetings, notifications by mail, collection programs for household hazardous waste, etc.

(iii) Management practices such as street sweeping, proper maintenance of streambanks, erosion control structures, etc.

(iv) Regulatory approaches such as county and local ordinances, permitting of construction sites, etc.

(v) Enforcement programs, established by the county and cities, including response to emergency incidents, field inspections, and identification and elimination of illegal discharges/illicit connections to the storm drain systems.

3.3 EXISTING POLLUTION CONTROLS FOR RESIDENTIAL AND COMMERCIAL/INDUSTRIAL AREAS

A significant part of the SAR-DAMP is the identification of existing practices in the permittees' jurisdictions which reduce the discharge of pollutants to waters of the United States. The identification of the existing BMPs in the permittees' jurisdictions in the Santa Ana region is based on the permittees' responses to an extensive questionnaire distributed in May 1992. The BMPs may not have been implemented for the sole purpose of reducing the discharge of pollutants. However, if a program or activity at least partially serves this purpose, it is termed a BMP.

The identification of existing BMPs serves as a basis for evaluating the mechanisms the permittees use to control pollutants in storm water runoff. The information was used for developing modifications to existing BMPs and for the development of new BMPs to reduce pollutant loads. These BMPs should reduce pollutant loads to the maximum extent practicable.

3.3.1 Description of Existing Agency BMP Programs

To facilitate identifying and assessing the BMPs currently utilized by the permittees and to assist in evaluating additional BMPs, BMPs are categorized as nonstructural controls and structural controls; nonstructural controls have been further sub-divided into three classifications based on their program characteristics as follows (refer to Table 3-1 for additional detailed information about the effect of these activities on pollutants):

- Environmental Education Activities (E). These activities include education of the public through the use of utility bill inserts, brochures, school or parks programs, public forums, videotapes, and reference materials at public libraries.
- Solid Waste Activities (SW). These activities include refuse removal, litter pickup, composting, recycling activities, and hazardous waste disposal.
- Road and Drainage System Operations and Maintenance (OM). These activities include street sweeping, storm drain system maintenance, and

TABLE 3-1
DESCRIPTIONS OF BEST MANAGEMENT PRACTICES
AND EFFECT ON POLLUTANTS

Environmental Education Activities

Environmental Education. Public education programs which help to reduce pollutants in storm water runoff range from utility bill inserts to contact numbers for disseminating recycling program drop off locations.

Solid Waste Activities

Refuse and Litter Pickup. Refuse and litter pickup decreases the amount of debris and pollutants entering the storm drain system due to improper or illegal disposal of wastes.

Hazardous Waste (HW) Disposal/Recycling. Organized collection systems or drop off points provide for proper disposal and/or recycling of industrial and domestic wastes such as paints, batteries, and solvents and cleansers can decrease the amount of these pollutants entering the drainage system.

Composting. Composting programs ranging from individual family compost piles to centralized composting facilities for green waste collected by refuse companies reduce the amount of green waste entering the drainage system. This decreases both the amount of pollutants with oxygen demand and levels of coliform in the storm water runoff.

Road and Drainage System Operations and Maintenance

Street Sweeping. Street sweeping contributes to control of pollutants in urban runoff by removing pollutants from urban streets and paved surfaces. The results of studies conducted under the Nationwide Urban Runoff Program (NURP) sponsored by the U. S. EPA indicated that the overall water quality benefits of typical street sweeping efforts are minimal, although the benefit could be increased if areas such as central business districts and industrial areas are targeted for intensive cleaning, especially in periods immediately preceding predicted rainfall.

Storm Drain System Maintenance. Cleaning catch basins, detention facilities, and drainage channels reduces the debris and sediment loads in the drainage system. Reducing sediment loads in the system also reduces the amount of heavy metal contaminants adsorbed on the sediment.

TABLE 3-1 (Concluded)

**DESCRIPTIONS OF BEST MANAGEMENT PRACTICES
AND EFFECT ON POLLUTANTS**

Ridesharing. Ridesharing reduces the amount of atmospheric pollutants deposited on land surfaces in the county and decreases pollutants in storm runoff from those surfaces.

Unauthorized Release Response. Chemical spills act like storm water runoff and flow into drainage systems. Emergency teams which respond to chemical spills can reduce the amount of pollutants entering the drainage system and decrease the amount of contaminants transported by runoff.

Pesticide-Fertilizer Application Control. Controlling the amount and types of pesticides and fertilizers used in the county can reduce the amounts of specific pollutants found in storm water runoff. Another form of control specifies proper disposal practices for empty pesticide containers.

Structural Controls

Detention/Retention Facilities. These facilities trap sediment in the drainage system and reduce the sediment and heavy metal load in the storm water runoff. The facilities reduce the peak discharges in the drainage system and decrease streambank erosion by the runoff flow.

Regulatory Activities

Strengthening/Enforcing Existing Regulations. These requirements would encourage the elimination of storm drain and sewer cross-connection and improper waste disposal from households, vehicles, and pets.

unauthorized release response teams. Another activity includes storm drain and catch basin labelling to let the public know that wastes improperly discharged into them will be routed into streams and rivers.

A majority of the permittees have existing BMP programs within their jurisdictions. The BMPs currently utilized by each permittee are described below. Table 3-2 presents a summary of the existing BMPs for each co-permittee in the Santa Ana region based on their responses to the questionnaire.

For the purposes of BMP identification, a co-permittee does not have to administer a program in order for it to have that BMP. Many of the programs administered by Riverside County are regional in nature and can be used by adjacent municipal permittees. An example of a regional program is the hazardous materials emergency response team program for unauthorized chemical releases and spills operated by Riverside County Fire Department. The operation of drop-off locations for proper collection and disposal of household hazardous waste on a quarterly basis by Riverside County is another example of a regional program.

Descriptions of specific programs conducted by the co-permittees is presented below.

COUNTY OF RIVERSIDE:

Solid Waste Activities: Solid waste activities in the county include litter pickup and refuse pickup contracted by individual county service areas. Hazardous waste disposal and recycling programs are operated with five regional sites. To meet the requirements of the California Integrated Waste Management Act of 1989, an extensive system for recycling and waste stream reduction is being planned for the county. The goal is to divert up to 61 percent of the county's waste stream by the year 2000. Extensive planning has been done on this system, and is summarized in the Final Riverside County Source Reduction and Recycling Element and Household Hazardous Waste Element Report by County of Riverside Waste Management dated June 1992.

Road and Drainage System Operation and Maintenance: Street sweeping is done on a county-wide basis through contracts by individual county service areas. Catch basin cleaning is done on a county-wide basis. The County operates a Hazardous Materials Team

TABLE 3-2
CO-PERMITTEES EXISTING BEST MANAGEMENT PRACTICES

SOLID WASTE ACTIVITIES						ROAD AND DRAINAGE SYSTEM OPERATION AND MAINTENANCE						ENVIRONMENTAL EDUCATION ACTIVITIES	FLOOD MANAGEMENT PROJECTS
	Refuse Removal	Hazardous Waste Disposal/ Recycling	Recycling	Compost	Litter Pickup	Street Sweeping	Pesticide- Fertilizer Application Control	Unauthorized Release Response	Storm Drain System Maintenance	Ridesharing	Utility Bill Inserts, Rideshare Coordinators, Public Contact Numbers	Structural Controls	
SANTA ANA - PHASE I													
Riverside City	Y	P	Y	Y	Y	Y	N	Y	Y	Y	Y		
Norco						Y			Y				
Corona	Y	P	Y&P	P	Y	Y	Y	Y	Y	Y	Y		
Lake Elsinore	Y	N	N	N	Y	Y	N	N	Y	N	Y		
Riverside County ¹	N	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	
Canyon Lake													
RCFCA/WCD	N	N	N	N	N	N	Y	Y	Y	Y	N	Y	
SANTA ANA - PHASE II													
Moreno Valley		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Beaumont						Y			Y				
Hemet	Y	N	Y	Y	N	Y	N	Y	Y	N	N		
Perris	Y	P	P	N	Y	Y	N	Y	Y	N	Y		
San Jacinto	Y	P	P			Y		Y	Y		Y	Y	
Callicoon ²	Y	Y	Y		Y	N							

¹ Riverside County programs are regional in nature and co-permittees can access some of them.

² Based on preliminary responses from co-permittee

Y = Existing BMP

N = No BMP at this time

P = BMP to be implemented in future

Blank = No information submitted

(HAZMAT) in conjunction with the Fire Department. The team responds to spills throughout the county and serves as backup to municipal fire departments of the other permittees. Additionally, the county manages a ridesharing program for county employees in order to reduce vehicle emissions.

Environmental Education Activities: A public information program exists for household hazardous materials and is operated by the Department of Health Services. The Planned Source Reduction and Recycling Element have a large public education component.

Structural Controls: The County has a number of retention/detention basin facilities at various locations throughout the county. The locations of these facilities are given in the Facility Maps provided in the permit application submitted to the Regional Boards.

CITY OF RIVERSIDE

Solid Waste Activities: The City of Riverside provides refuse pickup within its jurisdiction through a city-operated service and by subcontracting out portions of the City to other waste collection companies. Litter pickup is performed by the Public Works Department. Recycling and disposal is performed through a pilot program started in 1991; the program may be implemented City-wide by 1993. The City will participate in an extensive waste stream diversion program by the implementation of a County-owned materials recovery facility by 1995 for sorting and recycling refuse. The City plans to implement a comprehensive commercial and industrial recycling program in 1995. A composting program began in June 1992 offering curbside service to individual households.

Road and Drainage System Operation and Maintenance: The City conducts street sweeping with its own equipment, and has a hydro-vacuum truck for cleaning its catch basins. There is a ridesharing program in the City, and the fire department responds to emergency chemical spills. The Riverside County HAZMAT Team is available upon request.

Environmental Education Activities: Information about recycling drop off points are provided in a utility bill insert. An insert also provides information about proper disposal methods for hazardous waste in conjunction with the County's Hazardous Waste Mobile Program. The waste stream diversion program and intermediate processing facility program

have large public education components. Strategies may include brochures, block leader support programs, school education programs, recognition awards, media advertising, community events, and videos.

CITY OF CORONA

Solid Waste Activities: The City provides a refuse pickup service to the public and does litter pickup. An extensive composting program will be implemented in 1994 and 1995 which will include curbside collection and drop off facilities. Corona has a pilot program for recycling and disposal of hazardous and non-hazardous waste, and will start drop off centers and curbside pickup in 1993.

Road and Drainage System Operation and Maintenance: The City sweeps its streets with rented equipment, and cleans its catch basins and lined channels on a regular basis. The Parks and Recreation Department has a program to control pesticide application in city-owned parks and open space areas. The City responds to unauthorized releases of chemicals in conjunction with the HAZMAT team. Corona also has a ridesharing program.

Environmental Education Activities: Corona has flyers listing drop off recycling centers for non-hazardous materials available to the public. The planned waste recycling programs have a large public education element.

CITY OF NORCO

Road and Drainage System Operation and Maintenance: The City sweeps its streets and cleans its catch basins on a regular basis.

CITY OF LAKE ELSINORE

Solid Waste Activities: A contract service provides refuse pickup to city inhabitants. City workers do litter pickup within the city boundaries.

Road and Drainage System Operation and Maintenance: Catch basins in the City are cleaned on a regular basis by the City's Maintenance Division.

CITY OF CANYON LAKE

Canyon Lake is composed of private communities and has only two public streets. The City has not reported existing any BMPs at this time.

CITY OF MORENO VALLEY

Solid Waste Activities: The Public Works Department conducts litter pickup with workers on weekends. The City is encouraging waste recycling, through the Recycle America Program. Also private waste companies will commence construction of a materials recycling facility in January of 1993. Ultimately the facility will separate recyclables on-site thus making the recycling effort minimal to individual households. Hazardous waste disposal is coordinated through the Riverside County program at one of the five regional sites.

Road and Drainage System Operation and Maintenance: The City uses its own equipment to do street sweeping on a regular basis. Catch basin cleaning is done by the Public Works Department. The City has ridesharing programs for its employees, pesticide application control programs, and uses the HAZMAT team to respond to unauthorized releases of chemicals.

Environmental Education Activities: The ridesharing program is publicized among City employees, and an annual survey provides a measure of its effectiveness. The City participates in Waste Management of Inland Valley, a regional recycling program, which includes public education regarding recycling.

CITY OF BEAUMONT

Road and Drainage System Operation and Maintenance: The City sweeps its streets and cleans its catch basins on a regular basis.

CITY OF HEMET

Solid Waste Activities: Hemet provides a refuse pickup service in the City or contracts the service to other waste companies. They have a backyard composting program for individual customers, and a contract service provides a collection center for household hazardous waste.

Road and Drainage System Operation and Maintenance: The City performs street sweeping and catch basin cleaning on a regular basis, and the fire department responds to unauthorized releases of chemicals in conjunction with the HAZMAT team.

CITY OF PERRIS

Solid Waste Activities: There is a refuse pickup service available to the public, and the City has recently adopted a comprehensive source reduction and recycling element that will be implemented in phases through the year 2000.

Road and Drainage System Operation and Maintenance: The City does street sweeping and catch basin cleaning on a regular basis. The cleaning is done at the end of summer before the winter rainy season. The City does respond to unauthorized releases of chemicals.

Environmental Education Activities: The planned source reduction and recycling element has an important public education component.

CITY OF SAN JACINTO

Solid Waste Activities: The City provides refuse pickup through a contracted service. A recent agreement between the city and a contract service will provide extensive recycling of hazardous and nonhazardous materials in the City's waste stream.

Road and Drainage System Operation and Maintenance: The City has almost no underground drainage facilities but does clean the drainage channels in the city's jurisdiction. They sweep the streets on a regular basis. The fire department responds to unauthorized releases of chemicals.

Environmental Education Activities: The contract service for the recycling is required to publicize its services by sending a flyer to their customers.

Structural Controls: The City has a series of retention basins which reduce peak flows and trap sediment in the drainage system.

CITY OF CALIMESA

Solid Waste Activities: Preliminary reports from the City indicate that it has programs which provide refuse and litter pickup and recycling.

3.4 MODIFICATIONS AND ADDITIONS TO EXISTING BMPs FOR RESIDENTIAL AND COMMERCIAL/INDUSTRIAL AREAS

From the descriptions of the existing BMP programs it is apparent there are a variety of BMPs being implemented throughout the Santa Ana region. This section presents BMPs that are *modifications* to existing BMPs and *additional* BMPs that have been selected and refined by the permittees for inclusion in the SAR-DAMP. Those that are modifications to existing BMPs include: BMPs R1, R2, R3, SW1, SW2, SW3, OM1, OM2, OM3, OM4, OM5. These BMPs are either existing regulations, solid waste management activities and operations and maintenance activities that are already in effect to some degree but require modification to function as storm water quality controls.

The co-permittees will implement the modified or additional BMPs in their individual SWMPs. When individual SWMPs are developed by each co-permittee, jurisdictions that do not presently have the BMP programs will implement the additional BMPs. The co-permittees will implement the modified BMPs with some variation due to the specific degree of existing implementation. However, all co-permittees will implement and/or participate in the implementation of each BMP to assure uniformity throughout the Santa Ana region.

Each BMP presented is viewed as a separate program with associated action plans to be pursued by the referenced committee. Each action plan has an associated schedule. Additionally, a final date for completion of all actions is presented. An implementation schedule for all BMPs is presented in Figure 1-6.

REGULATORY AND ENFORCEMENT ACTIVITIES

BMP R1	Research, strengthen if needed, and enforce existing regulations which provide the legal authority to eliminate cross-connections, to prevent sanitary sewage and/or commercial/industrial wastewater from entering storm drains or drainage channels.
Action R1A	<p>Review the legal description report on file with RCFC&WCD for a description of the relevant city, county, state and federal ordinances and regulations that provide legal authority for the items described in BMP R1. Identify issues for which no legal authority currently exists.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/93 - 3/93</p>
Action R1B	<p>Review the model ordinance on file with the RCFC&WCD to provide standardized language to all co-permittees that lack adequate legal authority to eliminate illicit connections. The model ordinance will also be reviewed by county counsel, city attorneys and other attorneys that represent the co-permittees.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/93 - 3/93</p>
Action R1C	<p>Adopt the model ordinance.</p> <p>Implementation: Co-permittees' City Council/Board of Supervisors</p> <p>Schedule: 3/93 - 9/93</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 9/93</p>

BMP R2	Research, strengthen if needed, and enforce regulations which prevent the improper disposal of pollutants into storm drains and drainage channels.
Action R2A	<p>Review the legal description report on file with RCFC&WCD for a description of existing local ordinances and regulations that prohibit disposal to the storm drain system.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/93 - 3/93</p>
Action R2B	<p>Review the model ordinance on file with the RCFC&WCD to provide co-permittees' authority to prohibit and enforce against improper disposal of pollutants to the storm drain system.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/93 - 3/93</p>
Action R2C	<p>Adopt the model ordinance.</p> <p>Implementation: Co-permittees' City Council/Board of Supervisors</p> <p>Schedule: 3/93 - 9/93</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 9/93</p>

BMP R3	Continue to implement and enforce leash laws and pet waste clean up ordinances in selected public-use areas.
Action R3A	<p>Review existing leash and pet laws as well as enforcement actions. Where necessary, post additional signs and consider increasing enforcement.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 3/93 - 9/93</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 9/93</p>

BMP R4	Evaluate the need to establish regulations which give municipalities the authority to require oil and grease controls in areas which are significant sources of oil and grease to storm water (eg., gas stations, automotive shops, commercial/industrial facilities, parking areas, food service establishments).
Action R4A	<p>As appropriate, develop, implement and enforce regulations requiring oil and grease controls from significant sources.</p> <p>Implementation: NPDES Advisory Committee and Co-permittees' City Councils/Board of Supervisors</p> <p>Schedule: 9/93 - 12/94</p>
Action R4B	<p>As appropriate, develop technical guidance which will facilitate land owners' and tenants' efforts to comply with the regulations requiring oil and grease controls (eg., oil/grease traps, plate separators, synthetic absorbent media, grass swales).</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/95 - 6/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/95</p>

BMP R5	<p>Develop, implement and enforce regulations which will provide authority to prohibit direct connections to the drainage system (i.e., prohibit roof downspouts that are directed to impervious surfaces). This regulation would also address retrofitting of existing businesses where practical and feasible.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/94 - 12/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 12/94</p>

SOLID WASTE ACTIVITIES

BMP SW1	Provide, collect, and maintain litter receptacles in strategic public areas, and during public events.
Action SW1A	<p>Identify specific areas where trash receptacles are needed.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 3/93 - 9/93</p>
Action SW1B	<p>Place permanent receptacles in areas where they are needed, and make additional receptacles temporarily available for use during special public events. Availability of such receptacles will be publicized through cooperation with the public education/participation program.</p> <p>Implementation: Co-permittee's Public Works Departments</p> <p>Schedule: 9/93 - 3/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 3/94</p>

BMP SW2	Research, strengthen if needed, and enforce regulations which provide legal authority to control littering and the improper disposal of potentially harmful wastes.
Action SW2A	<p>Evaluate existing regulations and enforcement procedures to assess their effectiveness in controlling litter/waste disposal. Evaluate whether new or stronger regulatory authority is needed.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 3/93 - 9/93</p>
Action SW2B	<p>If needed, draft and adopt new or stronger regulatory language.</p> <p>Implementation: NPDES Advisory Committee and Co-permittees' City Council/Board of Supervisors</p> <p>Schedule: 9/93 - 3/94</p>
Action SW2C	<p>Identify high-priority areas in which to focus enforcement efforts. Evaluate use of a pilot program to test new enforcement procedures.</p> <p>Implementation: NPDES Advisory Committee and Household Hazardous Waste Committee</p> <p>Schedule: 3/94 - 3/95</p>
Action SW2D	<p>Implement pilot program and/or implement additional procedures.</p> <p>Implementation: NPDES Advisory Committee and Household Hazardous Waste Committee</p> <p>Schedule: 3/94 - 3/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 3/95</p>

BMP SW3	Continue and expand programs (such as those outlined in the County Solid Waste Management Plan's Household Hazardous Waste Element) which provide a convenient means to properly dispose of oil, antifreeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals.
Action SW3A	<p>Continue the efforts to provide permanent year-round drop-off locations (such as the regional material recovery facilities planned by the Riverside County Waste Management Department) for oil, paints and other common chemicals and household hazardous wastes (HHW).</p> <p>Implementation: Household Hazardous Waste Committee and Riverside County Waste Management Department</p> <p>Schedule: 3/93 - 9/93</p>
Action SW3B	<p>Obtain commitment from co-permittees to participate in areawide HHW collection program.</p> <p>Implementation: Household Hazardous Waste Committee</p> <p>Schedule: 6/93 - 3/94</p>
Action SW3C	<p>Prepare a master schedule for areawide program implementation.</p> <p>Implementation: Household Hazardous Waste Committee and Riverside County Waste Management Department</p> <p>Schedule: 3/94 - 6/94</p>
Action SW3D	<p>Implement areawide HHW collection program. Program should be consistent with other public education efforts regarding waste disposal and recycling.</p> <p>Implementation: Household Hazardous Waste Committee and Riverside County Waste Management Department</p> <p>Schedule: 6/94 - 6/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/95</p>

ROAD AND DRAINAGE SYSTEM OPERATIONS AND MAINTENANCE

BMP OM1	Continue and expand field program to detect and prevent dumping or routinely discharging pollutants into storm drains and drainage channels. This should involve re-evaluating previous decisions to allow certain relatively clean waters such as swimming pool water to be discharged to the storm water systems.
Action OM1A	<p>Develop and conduct training program for field personnel (including in-field workshops) to conduct inspections. Training may include development of appropriate manuals and training materials.</p> <p>Implementation: NPDES Advisory Committee and Co-permittees' Public Works Departments</p> <p>Schedule: 6/93 - 3/94</p>
Action OM1B	<p>Develop implementation schedule for conducting field inspections of storm drain system.</p> <p>Implementation: Co-permittees' Public Works Department</p> <p>Schedule: 1/93 - 3/94</p>
Action OM1C	<p>Conduct field inspections to ensure identification and elimination of illegal dumping and discharge.</p> <p>Implementation: Co-permittees' Public Works Department</p> <p>Schedule: 3/94 - 12/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 12/94</p>

BMP OM2	Develop and implement a pilot program to test, remove and properly dispose of sediment deposits accumulated in large detention and retention basins which may contain relatively high concentrations of pollutants.
Action OM2A	<p>Identify/prioritize areas of concern within the County and set up a field testing program of detention and retention basins to be conducted during maintenance operations.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 12/93 - 6/94</p>
Action OM3B	<p>Conduct limited (pilot-scale) sediment collection and testing to evaluate pollutant concentrations in detention and retention basins of concern.</p> <p>Implementation: Co-permittees' Public Works Department and RCFC&WCD</p> <p>Schedule: 6/94 - 12/94</p>
Action OM2C	<p>Based on results of pilot-scale study, develop recommendations for pollutant removal and disposal in detention retention basins.</p> <p>Implementation: Co-permittees' Public Works Department and NPDES Advisory Committee</p> <p>Schedule: 12/94 - 6/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/95</p>

BMP OM3	Develop and implement a program which provides a means of recording the observations of field inspection and maintenance personnel, so this information can be used to help locate the sources of pollutants.
Action OM3A	<p>Obtain copies of inspection log forms from other storm water programs in the state of California. Review the forms and use them to generate a version that is appropriate for use in the County.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 6/93 - 12/93</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 12/93</p>

BMP OM4	Develop and implement intensified street sweeping programs in strategic locations (e.g., central business districts, commercial and industrial areas) and/or at strategic times (following extended periods of dry weather).
Action OM4A	<p>Identify and prioritize problem areas within the permitted area where intensified street sweeping may be appropriate.</p> <p>Implementation: NPDES Advisory Committee and Co-permittees' Public Works Departments</p> <p>Schedule: 6/93 - 12/93</p>
Action OM4B	<p>Design and implement a pilot-scale test of intensified street sweeping efforts to evaluate feasibility and effectiveness of implementation.</p> <p>Implementation: Co-permittees' Public Works Department</p> <p>Schedule: 1/94 - 12/94</p>
Action OM4C	<p>Based on results of pilot-scale study, formulate recommendations for city-specific implementation.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/95 - 6/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/95</p>

BMP OM5	Evaluate pavement repair and maintenance programs for public streets and parking areas (e.g., fill potholes, seal cracks, apply surface treatments).
Action OM5A	<p>Where needed, design and implement an improved repair and maintenance program.</p> <p>Implementation: NPDES Advisory Committee and Co-permittees' Public Works Departments</p> <p>Schedule: 9/93 - 6/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/94</p>

BMP OM6	<p>Develop a contingency plan for revegetating and otherwise restoring eroding lands such as those damaged by fire, landslides and off-road vehicle use. This measure would apply to publicly-owned and maintained open spaces and rights-of-way. Information should be made available to the public on these programs as necessary.</p> <p>Implementation: NPDES Advisory Committee and Co-permittees' Public Works Departments</p> <p>Schedule: 1/94 - 12/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 12/94</p>

ENVIRONMENTAL EDUCATIONAL ACTIVITIES

BMP E1	Educate/inform on proper application and management of pesticides, fertilizers and herbicides. Coordinate with the Soil Conservation Service and Resource Conservation Districts.
Action E1A	<p>Educate/inform commercial applicators and other high volume users of pesticides, fertilizers and herbicides, on the proper use and management of these products. Application methods and frequencies, sensitive areas, precautions, storage and disposal are topics to discuss. Brochures, pamphlets, workshops, site visits could be used.</p> <p>Implementation: Public Education/Participation Committee Schedule: 6/93 - 6/94</p>
Action E1B	<p>Educate/inform municipal agency personnel responsible for channel, park, golf course and highway right-of-way maintenance about the proper use and management of pesticides, fertilizers, and herbicides. Alternative methods for controlling insects and weeds such as biological controls and the use of less toxic chemicals should be encouraged through internal workshops and guidance documents.</p> <p>Implementation: Public Education/Participation Committee Schedule: 6/93 - 6/94</p>
Action E1C	<p>Educate/inform the general public on the proper use, management and disposal of fertilizers and pesticides. Brochures should be made available at commercial stores which sell these products and at public libraries and other public information locations. Alternate methods for controlling insects and weeds such as biological controls and less toxic chemicals should be encouraged in information brochures.</p> <p>Implementation: Public Education/Participation Committee Schedule: 6/93 - 6/94</p>
Completion Schedule	<p>Complete program development Date: 6/94</p>

BMP E2	Educate/inform on impacts from littering and improper waste disposal
Action E2A	<p>Educate/inform the general public through utility bill inserts, brochures, or other means on the storm water pollution impacts that result from littering and improper waste disposal practices.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 6/93 - 6/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/94</p>

BMP E3	Educate/inform on impacts from dumping pollutants into storm drainage system
Action E3A	<p>Educate/inform the general public on the impacts that result when oil, antifreeze, pesticides, herbicides, paints, solvents, or other potentially harmful chemicals are dumped into storm drains or drainage channels.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 6/93 - 6/94</p>
Action E3B	<p>Coordinate volunteer efforts to label storm drain inlets with the message "No Dumping - Drains to Stream (lake, river)." Stencil kits containing instructions, a stencil, paint, safety equipment, etc. can be loaned to volunteer groups and businesses to label select drains.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 9/93 - 12/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 12/94</p>

BMP E4	Educate/inform on impacts from gasoline, fuel oil, and oil and grease
Action E4A	<p>Educate/inform commercial and industrial businesses on the effective use of good housekeeping practices, oil/grease traps and the use of absorbent and cleaning compounds for controlling oil and grease in gas stations, automotive repair shops, parking areas, commercial/industrial facilities, and food service facilities.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 1/94 - 6/94</p>
Action E4B	<p>Educate/inform general public on the water quality impacts which result from leaks and spills from gasoline, fuel oil, and chemical tanks (above and below ground).</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 6/93 - 6/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/94</p>

BMP E5	Educate/inform on impacts from airborne particles
Action E5A	<p>Educate/inform the general public on the relationship between air pollution and storm water quality problems. Obtain public information from air quality agencies.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 1/94 - 12/94</p>
Action E5B	<p>Inform the air quality and public transportation agencies of the purpose of the Santa Ana Regional DAMP. Encourage the agencies to include in their public information materials the water quality benefits from improved air quality.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 1/94 - 3/94</p>
Action E5C	<p>Where appropriate, support the efforts of public transportation agencies, public agency motor pools, and/or public works departments in providing effective air pollution controls on publicly-owned vehicles and motorized equipment, and/or use of alternative, clean-burning fuels.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 3/93 - 6/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/95</p>

BMP E6	<p>Educate/inform the general public on the need to keep storm water from contacting potential contaminants. Describe typical examples of the problem and provide practical solutions.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 6/93 - 6/94</p>
<p>Completion Schedule</p>	<p>Complete program development Date: 6/94</p>

BMP E7	<p>Educate/inform the public regarding the need to clean-up and properly dispose of pet waste. Provide informational signs in public parks and other selected areas as appropriate.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 6/93 - 6/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/94</p>

BMP E8	<p>Develop and implement programs to work with landowners, tenants, and/or public agencies to apply practical erosion control and sediment control practices to existing and potential erosion problem areas.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 1/94 - 12/94</p>
<p>Completion Schedule</p>	<p>Complete program development Date: 12/94</p>

BMP E9	<p>Develop, implement and enforce regulations which require landowners and/or tenants to provide covers (roofs, tarps) to keep rain off of areas which contain potential contaminants (storage areas) and keep runoff from draining through areas which contain contaminants.</p> <p>Implementation: NPDES Advisory Committee</p> <p>Schedule: 1/94 - 12/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 12/94</p>

BMP E10	<p>Educate/inform municipalities and agencies about the need for vehicle inspection to reduce leakage of oil, antifreeze, hydraulic fluid, etc. for agency and public vehicles.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 6/93 - 6/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/94</p>

BMP E10	<p>Educate/inform municipalities and agencies about the need for vehicle inspection to reduce leakage of oil, antifreeze, hydraulic fluid, etc. for agency and public vehicles.</p> <p>Implementation: Public Education/Participation Committee</p> <p>Schedule: 6/93 - 6/94</p>
<p>Completion Schedule</p>	<p>Complete program development Date: 6/94</p>

STRUCTURAL CONTROLS

BMP S1	Evaluate the need and appropriate locations for structural controls to remove pollutants from storm water runoff
Action S1A	<p>Identify and prioritize areas of concern within the Santa Ana Region which are downstream of high pollutant loading areas.</p> <p>Implementation: NPDES Advisory Committee and RCFC&WCD Schedule: 6/93 - 12/93</p>
Action S1B	<p>Review the operational history of existing detention and retention basins.</p> <p>Implementation: NPDES Advisory Committee and RCFC&WCD Schedule: 9/93 - 3/94</p>
Action S1C	<p>Evaluate the effectiveness of retrofitting existing storm water detention basins (in identified high priority areas) to function as combination retention/detention basins to retain the water for longer periods and trap sediments from small storm events.</p> <p>Implementation: NPDES Advisory Committee and RCFC&WCD Schedule: 1/94 - 9/94</p>
Action S1D	<p>Evaluate the effectiveness of building and maintaining detention basins in existing high priority areas of concern.</p> <p>Implementation: NPDES Advisory Committee and RCFC&WCD Schedule: 9/94 - 3/95</p>
Action S1E	<p>Evaluate the effectiveness of installing in-line detention and/or in-line infiltration facilities within urban areas to trap and/or remove sediments in runoff generated during small storm events.</p> <p>Implementation: NPDES Advisory Committee and RCFC&WCD Schedule: 9/94 - 3/95</p>
Action S1F	<p>Evaluate the effectiveness of establishing, maintaining, and testing wetlands and riparian vegetation in retrofitted and/or new drainage channels. Coordinate with Riverside Land Conservancy where appropriate.</p> <p>Implementation: NPDES Advisory Committee and RCFC&WCD Schedule: 3/94 - 3/95</p>
Completion Schedule	<p>Complete program development Date: 6/95</p>

4.1 INTRODUCTION

Many pollutants in urban runoff originate from construction sites and from developed areas. The pollutants are transported to the municipal storm drain system in rainfall runoff. Municipalities in the Santa Ana region of Riverside County have the opportunity to expand existing programs and to incorporate new practices into construction and new developments to control the amount of pollutants in urban runoff.

The NPDES permit issued to the permittees of the Santa Ana RWQCB area requires implementation plans for site-specific best management practices (BMPs) intended to reduce pollutants in storm water discharges from existing residential, commercial and industrial areas, as well as construction sites and new development. The proposed approach for construction and new development recommendations is to meet the requirements of the NPDES permits, the State General Storm Water Permit for Construction Activities, the federal regulations, and the objectives of the Riverside County DAMP and SAR-DAMP as established by the co-permittees. Also emphasis is placed on utilizing as many of the existing programs as possible, and requiring uniformity of implementation. This approach emphasizes the use of non-structural control measures for both construction and new development as required in the Santa Ana NPDES permit and federal regulations. To ensure comprehensive compliance, the proposed BMPs must apply to both private and public sector construction and new development projects.

4.2 CONSTRUCTION SITES

4.2.1 Permit Requirements for Construction Sites

Requirements for implementing BMPs at construction sites as stated in the NPDES permit issued by the Santa Ana RWQCB are:

- i. New Construction Sites: A full range of structural and non-structural BMPs shall be required at new construction sites. All industrial/commercial construction operations that result in the disturbance of one acre or more of total land area (or*

a smaller parcel of land which is part of a larger common development) and residential construction sites that result in a disturbance of five acres or more of total land area (or a smaller parcel of land which is a part of a larger common development) shall be required to develop and implement BMPs . . . , including a long term funding mechanism and commitment to support required maintenance of the BMPs, to control erosion/siltation and contaminated runoff from construction sites.

4.2.2 Potential Pollutants Generated at Construction Sites

The primary pollutant of concern generated during construction is sediment. Uncontrolled sediment easily erodes off of exposed land surfaces (such as newly graded areas) during rainfall, is tracked off-site by heavy equipment or is blown off-site during dry periods. Sediment can enter the storm drain system, and unless properly maintained, the storm drains can become clogged. When the sediment-laden water eventually reaches regional receiving waters it can create environmental impacts such as smothering of aquatic habitat, clogging of fish gills, and reduced dissolved oxygen content. Economic burdens can be created from sedimentation as well; excessive turbidity to public drinking water supplies can require costly water treatment, and the sediment that fills in drainage areas can require costly dredging.

Construction sites are also recognized as potentially significant sources of other pollutants in runoff. Sand, gravel and admixtures used to make concrete are often stockpiled on construction sites with no control to prevent rainfall and waters generated on site from contacting the materials. Concrete washwater is often dumped into the street or storm drain. Building materials themselves (such as paint, plaster, solvents and tile) can be pollutant sources if improperly managed. Employee vehicles and construction vehicles, unless carefully maintained, may leak fuels, oil and antifreeze, thus generating additional pollutants from the site. Finally, uncontrolled trash and debris, as well as unmanaged employee sanitation facilities, can contribute pollutants to storm water. As mandated by the Federal Clean Water Act and the EPA's non-point pollution regulations, the NPDES permit issued by the Santa Ana RWQCB recognizes the pollutant-generating characteristics of construction sites and therefore, requires that a series of BMPs be adopted for use during the construction process.

4.2.3 Existing Construction Site BMPs

The co-permittees currently require a variety of management practices at construction sites that reduce the potential for pollutants to enter the storm drain system. A summary of these

existing BMPs is provided below. The summary is based on information gathered during a preliminary inventory and review of existing practices that are required by the municipalities in the Santa Ana region. Information was collected using a questionnaire submitted to each of the Santa Ana region co-permittees.

The existing BMPs and current control practices may not have been implemented by the municipality for the sole purpose of controlling pollutants in storm runoff. However, if a practice at least partially serves this purpose, then it is identified as a BMP. The objective of the summary provided below is to identify what BMPs are already employed, as well as to provide information that can be used to make recommendations for expanding existing BMPs and for the development of new BMPs to reduce pollutant loads to the maximum extent practicable.

Descriptions of the co-permittees' programs are presented below.

COUNTY OF RIVERSIDE

Riverside County has a grading ordinance that requires a grading permit when a minimum of 50 cubic yards of earth is cut, filled or imported. The ordinance calls for erosion control on slopes and requires approval of a sediment control plan and landscape/irrigation control plan prior to issuance of a grading permit. Other ordinances require rubbish and debris collection and removal on construction sites. The County's Land Use Ordinance requires wind erosion control for potential land divisions that lie within the Colorado River Watershed Basin and are of a particular soil type. The County requires site inspections to monitor compliance with grading plans, but does not provide regular erosion control training for inspectors.

CITY OF RIVERSIDE

The City of Riverside follows Chapter 70 of the Uniform Building Code which requires submittal of grading plans and erosion control plans for slopes. Measures for erosion, dust and drainage control are required for all stockpiled materials. However, no grading inspections are made by the City at this time. The City also requires contractors to follow South Coast Air Quality Management District's dust control measures.

CITY OF NORCO

No information on existing construction programs has been provided.

CITY OF CORONA

Grading plans, erosion control plans and sedimentation control devices are required by the City of Corona's grading ordinance. The city requires on-going inspection of site grading by the soils engineer, and daily inspections during storms. The City also holds grading seminars and has staff meetings to train inspectors on proper erosion and sediment control.

CITY OF LAKE ELSINORE

Lake Elsinore requires temporary drainage and erosion control plans for slopes during the rainy season (October 15 - April 15). The plans may include a wide variety of slope stabilization and de-silting measures. The ordinance requires, among other things, a stand-by crew to be available at all times during the rainy season for emergency erosion control work. Site inspection is performed at various stages of the grading operations. Training for inspectors is done on-the-job.

CITY OF CANYON LAKE

The City of Canyon Lake is currently in the process of adopting an ordinance entitled "Building and Construction" adopting the Uniform Building and Related Codes.

CITY OF MORENO VALLEY

The City of Moreno Valley has adopted Chapter 70 of the Uniform Building Code with revisions for additional requirements. The City requires that a grading permit be obtained for grading in excess of 50 cubic yards of cut or fill. Before a grading permit is issued, all developers must have an erosion control plan approved by the City Engineer and must be ready to implement the plan during the rainy season and at times that rain is forecast. The City's Public Works inspectors inspect grading activities and erosion control measures. Inspectors further monitor construction activities and requires that dust abatement procedures be implemented such as watering to keep dust from spreading to occupied areas and city streets. The City provides training opportunities for inspectors including field reviews of

erosion problems. Street sweeping is conducted on a routine basis by City maintenance personnel. Catch basins and junction boxes are cleaned of silts and sediments as required.

CITY OF BEAUMONT

The City of Beaumont does not have any specific regulations relating to erosion control. However, there is a Nuisance Ordinance requiring abatement of certain existing conditions (such as the presence of refuse and waste on the property, sewage on the ground, the presence of polluted water or stagnant water) on properties within the City.

CITY OF HEMET

No information on existing construction programs has been provided.

CITY OF PERRIS

The City of Perris follows Chapter 70 of the Uniform Building Code requiring minimum standards for grading and erosion control. The city does require site inspection, but has no specific guidance materials or training for erosion control.

CITY OF SAN JACINTO

The City of San Jacinto requires a grading plan for erosion control on slopes, and where planting is required for erosion control, a landscape plan must be submitted.

CITY OF CALIMESA

No specific information on construction programs has been provided.

4.2.4 Additional BMPs for Construction Sites

The BMPs presented in this section are currently not being conducted by any of the co-permittees based on responses to the questionnaires. The new programs are designed to fill in the gaps from existing BMP programs. The BMPs were selected and refined by the co-permittees using the DAMP for Riverside County.

Each BMP presented is viewed as a separate program with associated action plans to be pursued by the referenced committee. Each action plan has an associated schedule. Additionally, a final date for completion of all actions is presented. An implementation schedule for all BMPs is presented in Figure 1-6.

REGULATORY AND ENFORCEMENT ACTIVITIES

BMP R6	Review and evaluate existing ordinances throughout the County for adequate control of construction site erosion, sedimentation and construction materials pollutants (i.e. paints, masonry wastes, etc.). The evaluation should also include an assessment of enforcement actions.
Action R6A	<p>Should it be determined that the type of construction control measures and the level of enforcement of ordinances and codes vary significantly among the municipalities, consider the development of a model construction site control ordinance or amendments to existing ordinances to provide uniformity for control measures.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 6/93 - 9/93</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 9/93</p>

BMP R7	Establish a model construction site control ordinance (if determined necessary based on BMP R6) for potential future adoption by the co-permittees in Riverside County. The ordinance will require control of pollutants from construction sites including erosion and construction materials.
Action R7A	<p>Develop a model construction site control ordinance to provide consistency for control measures throughout the County. In some cases it may be preferable for a municipality to amend an existing grading ordinance to include strict construction site erosion control measures and proper construction materials management practices. It should be noted that requirements outlined in Chapter 70 of the Uniform Building Code contain only minimal guidance on erosion and sediment control and would not meet the objectives of the Riverside County NPDES Permit.</p> <p>Implementation: Construction and New Development Advisory Committee Schedule: 9/93 - 9/94</p>
Action R7B	<p>Include a requirement in ordinances regulating construction site activities that site erosion and sedimentation control measures not be limited to slopes and require that an erosion control plan be submitted for review and approval by the grading/building department prior to issuance of a grading permit.</p> <p>Implementation: Construction and New Development Advisory Committee Schedule: 9/93 - 9/94</p>
Action R7C	<p>To facilitate coordination with the California General Storm Water Permit for Construction Activities (General Permit), the model construction site control ordinance shall require that all construction sites subject to the General Permit show proof of compliance (such as file number from Notice of Intent (NOI) submittal) prior to the issuance of a grading permit. Where appropriate, make the General Permit applications available at the appropriate grading/building department public counter.</p> <p>Implementation: Construction and New Development Advisory Committee and Co-permittees' Building and Safety Departments Schedule: 9/93 - 9/94</p>
Action R7D	<p>Educate inspectors regarding inspection and enforcement procedures including fines for non-compliance. A checklist should be created for site inspectors to follow explicitly. Inspectors should also be properly informed of procedures for responding to citizen complaints.</p> <p>Implementation: Construction and New Development Advisory Committee and Co-permittees' Building and Safety Departments Schedule: 9/94 - 3/95</p>
Action R7E	<p>Develop policies and procedures to ensure that construction site control requirements apply to both public and private sector projects.</p> <p>Implementation: Construction and New Development Advisory Committee Schedule: 9/93 - 9/94</p>
Action R7F	<p>Include a provision in the construction site control ordinance that erosion control and construction materials management BMPs can be selected from the California State Construction BMP Manual currently being finalized by the APWA/SWRCB Storm Water Task Force.</p> <p>Implementation: Construction and New Development Advisory Committee Schedule: 9/93 - 9/94</p>
Completion Schedule	Complete program development Date: 3/95

BMP R8	Adopt policies which require all CEQA (California Environmental Quality Act) and NEPA (National Environmental Policy Act) compliance documents to explicitly address construction site impacts (erosion/sedimentation and other construction material impacts) and incorporate enforceable mitigation measures (selected from an appropriate BMP list) to minimize environmental impacts.
Action R8A	<p>Expand existing initial study checklists to include consideration of construction site erosion, construction material pollutants and associated environmental impacts as areas of potential significant impact.</p> <p>Implementation: Construction and New Development Committee and Co-permittees' Planning Departments</p> <p>Schedule: 9/93 - 3/94</p>
Action R8B	<p>Ensure that staff review of CEQA or NEPA documents includes checking for construction site-related impacts and appropriate mitigation measures to control these impacts.</p> <p>Implementation: Construction and New Development Committee and Co-permittees' Planning Departments</p> <p>Schedule: 9/93 - 3/94</p>
Action R8C	<p>Where significant impacts are determined to occur, ensure that all feasible mitigation measures are incorporated into the project design.</p> <p>Implementation: Construction and New Development Committee and Co-permittees' Planning Departments</p> <p>Schedule: 9/93 - 3/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 3/94</p>

ENVIRONMENTAL EDUCATIONAL ACTIVITIES

BMP E11	Provide training and information materials on the proper procedures for effective construction site erosion control and construction materials management practices. Include education on the water quality impacts associated with sediment and other construction-related pollutants.
Action E11A	<p>Hold training classes on construction site best management practices for key staff members in the public works/engineering/ building/planning departments of the co-permittees that emphasize correct choice, installation and maintenance of controls. Distribute educational materials to building contractors and developers which could be kept on a construction site as a reference.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 3/94 - 12/94</p>
Completion Schedule	Complete program development Date: 12/94

4.3 NEW DEVELOPMENT

4.3.1 Permit Requirements for New Development

Requirements for the implementation of BMPs for new development as stated in the NPDES Permit issued by the Santa Ana RWQCB are:

ii. Residential and Commercial/Industrial Sites: To prevent the increase of pollutants in the storm water discharges, all new developments and existing facilities with significant redevelopment, irrespective of their size, must develop individual comprehensive, long-term, post construction storm water management plans, incorporating structural and non-structural BMPs. These management plans shall include a long term funding mechanism and commitment to support required maintenances of the BMPs.

4.3.2 Potential Pollutants Generated by New Development

After land is developed, paved surfaces replace natural pervious and vegetated surfaces and drainageways, thereby reducing infiltration of storm water and creating increased runoff volumes and in some cases flooding. In the past, land development practices focused on preventing flood damage by controlling discharges with storm drains, channels, levees and detention basins, but total volumes associated with smaller storm events remained uncontrolled. As this uncontrolled runoff accumulates in volume, its velocity increases, and more pollutants are picked up. When the pollutant-laden runoff reaches receiving waters, its increased volume and velocity can erode stream channels causing sedimentation. Unlike flood control, however, water quality problems associated with this uncontrolled urban runoff have not been emphasized in past land development practices.

A variety of pollutants are carried by paved surfaces to the storm drains during both large and small storm events. Studies have shown that the pollutants found in urban runoff can be categorized by the land uses in the developed areas. Table 2-1 in Section 2.2 presents a summary of typical pollutants found in developed areas. For large watershed areas, such as the drainage area of the Santa Ana River, this accumulation of pollutants in urban runoff

can create serious impacts to downstream receiving waters and associated environmental impacts to aquatic flora and fauna.

4.3.3 Existing BMPs Currently Employed for New Development

The co-permittees do not currently require specific controls on new residential, commercial and industrial developments to reduce storm water pollutants. They do require measures that control peak discharges from large storm events to prevent flood damage. For example, Riverside County's Planning Department requires that a conceptual drainage plan be submitted to control both on and off-site storm runoff. The plan must address all natural and man-made drainage facilities including retention basins, but the requirements address peak discharge control only, and do not address measures to reduce total volumes from the smaller storm events. The County also follows a flood control ordinance to implement the National Flood Insurance Program.

Also, the County's Land Use Ordinance contains a land use designation of W-1, which regulates land uses near watercourses that are subject to periodic flooding. The County and other municipalities follow federal and state regulations regarding development near wetlands and streams, however, none of the municipalities specifically address the control of storm water pollutants using structural and non-structural measures in new development projects.

The remaining municipalities in the Santa Ana region implement similar drainage and flood control requirements but none specifically address storm water quality control.

4.3.4 Additional BMPs for New Developments

The water quality of urban runoff can be controlled by a series of best management practices. According to the co-permittees, one of the priorities in BMP selection is low cost. The first level of BMP control (and the least expensive) is education for construction workers, land development professionals and the general public on storm water runoff pollution prevention. The second level BMPs are operations and maintenance practices, including measures such as covering on-site building materials to prevent exposure to

rainfall, and labelling catch basins. Education and operations/maintenance together constitute non-structural control.

The third level of BMPs, and generally the most costly, is structural control. Early in the site planning and engineering design process and even in the master planning process, many structural features can be incorporated or required for a proposed development that will help minimize pollutant loadings in urban runoff. As described in Section 3, these structural control measures can be categorized as:

Features that increase infiltration

The goal is to increase infiltration of runoff from small storm events where appropriate. By increasing infiltration, the amount of pollutants that can reach downstream surface waters is effectively reduced. Storm water infiltration features include grass swales, retention basins and filter strips, among others.

Features that direct runoff from nuisance areas

Directing flows from around more pollutant-prone areas, such as equipment yards and gas stations, can reduce the pollutants entering storm water. Directing storm water away from pollutant-prone areas can be adopted as a relatively simple standard practice in designing storm drainage plans for development projects.

Features that "treat" storm water

This approach makes use of known wastewater treatment methods, such as filtration, separation and settling, for storm water pollution control. Site designs can incorporate detention basins and/or constructed wetlands for volume reduction and pollutant settling for example, or include the installation of oil/water separators at storm drain inlets/outlets.

Incorporating these structural control features in the original development design can prove to be more cost-effective than having to retrofit existing facilities later. Although structural controls are more involved and expensive than public education and operation/maintenance practices, they have received current attention in storm water management (and are prescribed in the Santa Ana NPDES Storm Water permit and the federal regulations). Use of onsite structural control measures (such as onsite detention facilities) in larger developments is a consideration. When the results of the storm water monitoring data for the Santa Ana region are compiled and analyzed, areas of concern can be targeted for the implementation of feasible on-site structural control features. Regional structural controls will be also considered at that time as well. The purpose of all the BMPs is to reduce pollutant loads to the maximum extent practicable.

To meet the requirements of the NPDES permit, the following BMPs have been selected and refined by the co-permittees using the DAMP for Riverside County. in order to provide adequate pollutant control in new developments or extensive re-development areas.

Each BMP presented is viewed as a separate program with associated action plans to be pursued by the referenced committee(s). Each action plan has an associated schedule. Additionally, a final date for completion of all actions is presented. An implementation schedule for all BMPs is presented in Figure 1-6.

REGULATORY AND ENFORCEMENT ACTIVITIES

BMP R9	<p>Review existing ordinances and other land use controls to consider the need for the adoption of a new ordinance or amendments to existing ordinances for controlling storm water (e.g. land use ordinance). (The Riverside County NPDES permit and the State General Construction Activity Storm Water Permit require structural and non-structural BMPs in the control of storm water pollutants in new development). The objectives of a new ordinance or amendments to existing land use controls would be to control the overall quality of runoff. Specifically, an ordinance or amendments should require that new development projects and significant re-development projects implement feasible and appropriate structural practices to control peak discharges, promote infiltration, direct flows around areas which may be prone to pollutant accumulation such as gas stations, equipment yards, and properly manage the quality of any resultant runoff.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 6/93 - 9/93</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 9/93</p>

BMP R10	Based on BMP R9, develop a model storm water management ordinance for potential future adoption by municipalities in Riverside County or amend existing ordinances. The policies should apply to all public sector and private sector development programs.
Action R10A	<p>For a storm water management ordinance or amendments to existing ordinances, include a requirement that an evaluation of potential structural features that may be appropriate and feasible for a project site be included in grading and or building plans and be submitted for approval prior to the issuance of a grading or building permit.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 9/93 - 9/94</p>
Action R10B	<p>Require that building inspectors check for the storm water management controls after development to ensure proper installation.</p> <p>Implementation: Construction and New Development Advisory Committee and Co-permittees' Building and Safety Departments</p> <p>Schedule: 9/93 - 9/94</p>
Action R10C	<p>Develop policies and procedures to ensure that requirements in the storm water management ordinance or amendments to existing ordinances apply to both public and private sector development projects.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 9/93 - 9/94</p>
Action R10D	<p>Include a provision in the ordinance or amendments to existing ordinances that structural and non-structural practices be implemented to the maximum extent practical in new development. The Municipal BMP Handbook currently being finalized by the APWA/SWRCB Storm Water Task Force can be used for reference.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 9/93 - 9/94</p>
Action R10E	<p>Require in a storm water management ordinance or in an amendment to an existing ordinance that all catch basins in new developments be stenciled with public reminders against illegal dumping to the storm drain.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 9/93 - 9/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 9/94</p>

BMP R11	Develop a procedure to require that on-site facilities be maintained either by on-site maintenance crews, homeowners or by the municipality as appropriate. Designation of maintenance responsibilities should be determined in conditions of project approval.
Action R11A	<p>Develop a process for a re-inspection plan and self-reporting program for use by the designated responsible entity or individual to ensure structural controls are operating and maintained as designed.</p> <p>Implementation: Construction and New Development Advisory Committee</p> <p>Schedule: 9/94 - 3/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 3/95</p>

BMP R12	Require evaluation of environmental impacts associated with urban runoff during the CEQA (California Environmental Quality Act)/NEPA (National Environmental Policy Act) process, and incorporate enforceable mitigation measures that promote infiltration and properly manage the quality of runoff from a new development.
Action R12A	<p>Expand existing initial study checklists to include consideration of water quality impacts of urban runoff as potential areas of significant impact.</p> <p>Implementation: Construction and New Development Advisory Committee and Co-permittees' Planning Departments</p> <p>Schedule: 9/93 - 3/94</p>
Action 13B	<p>Where significant impacts are determined to occur, ensure that any feasible mitigation measures are incorporated into the project design.</p> <p>Implementation: Construction and New Development Advisory Committee and Co-permittees' Planning Departments</p> <p>Schedule: 9/93 - 3/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 3/94</p>

BMP R13	<p>To facilitate coordination with the California General Industrial Storm Water Permit, require that business license applications include the SIC code so that City/County Clerks can inform industrial facilities (during the business licensing process) of the possible need to submit an Notice of Intent (NOI) to comply with Permit. This would only apply to municipalities which require business licenses.</p> <p>Implementation: Construction and New Development Advisory Committee and Co-permittees' City/County Clerks Office</p> <p>Schedule: 9/93 - 6/95</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 6/95</p>

ENVIRONMENTAL EDUCATIONAL ACTIVITIES

BMP E12	<p>Educate/inform architects, engineers, building department personnel and local government officials on the water quality problems associated with urban runoff and the basic principles behind controlling runoff volumes and properly managing the quality of storm water runoff. Hold training classes and distribute appropriate literature.</p> <p>Implementation: Public Education/Participation Committee and Construction and New Development Advisory Committee</p> <p>Schedule: 9/93 - 9/94</p>
Action E12A	<p>Provide generic plans, specifications and demonstration projects to educate architects, engineers, building department personnel and local government officials about designing/requiring development projects that include appropriate storm water management controls.</p> <p>Implementation: Public Education/Participation Committee and Construction and New Development Advisory Committee</p> <p>Schedule: 9/93 - 9/94</p>
Completion Schedule	<p>Complete program development Date: 9/94</p>

BMP E13	<p>Provide generic plans, specifications and demonstration projects to educate architects, engineers, building department personnel and local government officials about designing/requiring development projects that include appropriate storm water management controls.</p> <p>Implementation: Public Education/Participation Committee and Construction and New Development Advisory Committee</p> <p>Schedule: 9/93 - 9/94</p>
Completion Schedule	<p>Complete program development</p> <p>Date: 9/94</p>

5.1 INTRODUCTION

The NPDES permit issued by the Santa Ana RWQCB requires that funding sources to implement programs of the SAR-DAMP be presented. Over the past two years, the RCFC&WCD and the co-permittees have prepared and submitted an annual fiscal analysis that provides the RWQCB information on the current fiscal year activities and associated costs, and the proposed activities and costs for the upcoming fiscal year. The discussion below presents a description of the sources of funds that will be utilized by the permittees to meet the expenditures associated with the implementation of the SAR-DAMP, and the estimated Fiscal Year (FY) 1993-94 budget for each co-permittee. Details regarding staffing and equipment will be provided during the development of the SWMP when specific needs for implementing BMPs are determined.

5.2 RCFC&WCD

In order to finance the programs of the NPDES permit issued by the Santa Ana RWQCB in May 1991, the RCFC&WCD established by Ordinance No. 13, a benefit assessment area to cover the Santa Ana watershed. Section 14 of the District Act provides the RCFC&WCD to levy assessments upon property in its jurisdiction to pay the costs and expenses of the RCFC&WCD "to carry out any of the objects or purposes of this Act." Such assessments may be levied within the RCFC&WCD or within the zones that benefit the particular District program. There are no restrictions on utilizing the monies thus collected.

In establishing the benefit assessment, the charge imposed on any parcel of property has been related to the storm water runoff generated from that parcel. A formula using a single-family residence on a 7,600 square foot lot as a benefit assessment unit (BAU) was developed by the RCFC&WCD to estimate charges applicable to parcels in all land use

classes with the exception of agricultural land, vacant or undeveloped lands, and federally-owned lands, all of which are exempted from any assessments.

The RCFC&WCD has used this source to fund its activities in FY 1991-92 and FY 1992-93. This will be utilized as the chief funding source through the permit period. Although the charge rate per BAU increased from 1991-92 to 1992-93, further increases in the rate are not anticipated for FY 1993-94 because of the administrative cost and time involved in informing each property owner of the proposed increase, a requirement that has come into effect due to 1992 amendments to the Brown Act.

5.3 RIVERSIDE COUNTY (UNINCORPORATED AREAS)

In 1991, Riverside County researched two funding alternatives - the establishment of a County Service Area (CSA) or a County-wide Assessment District to establish a funding source for NPDES permit programs. Due to the potential for delays in establishing a county-wide assessment district, and because a funding source needed to be in place by December 1991, the County opted to establish a CSA. State law (Government Code 25210.8a) authorizes local jurisdictions to create CSAs to generate funds for specific programs. CSA No. 152 was approved and adopted in November 1991 by the County Board of Supervisors as a funding mechanism to generate monies that would be used exclusively for the County's NPDES Storm Water Permit Program.

In FY 1992-93, the County adopted a flat charge of \$10 per parcel. For FY 1993-94, the County will utilize the formula used by the RCFC&WCD to estimate parcel charges.

5.4 THE CITIES OF CORONA, RIVERSIDE AND CALIMESA

The Cities of Corona and Riverside annexed into CSA 152 this year, which allows the cities to impose a parcel charge to fund their NPDES Storm Water Permit program. Although under state law cities can establish independent service area, the co-permittees have opted to join the CSA via annexation so that the administrative procedure established by the County to collect the funds can be used to collect the charge in incorporated areas also. This method also ensures that the parcel charge is uniform throughout the cities and the County. The City

TABLE 5-1
FUNDING SOURCES

Co-Permittee	Funding Source
Riverside County Flood Control District	Benefit assessment
Riverside County	CSA Parcel Charge
Beaumont	Sewer Account
Calimesa	CSA and General Fund
Corona	CSA Parcel Charge
Lake Elsinore	Drainage Fees
Moreno Valley	General Fund
City of Riverside	CSA Parcel Charge
Hemet	Utility Fees
San Jacinto	---
Canyon Lake	General Fund
Perris	General Fund

of Moreno Valley is considering joining CSA 152 for FY 1994-95. The City of Calimesa also proposes to annex into CSA 152 as NPDES activities progress.

5.5 OTHER CO-PERMITTEES

The City of Beaumont plans to fund NPDES storm water activities from its sewer account. The City of Moreno Valley proposes to use the City's General Fund for NPDES activities. The City of Lake Elsinore will fund the program through drainage fees collected from developers, and the City of Perris will rely on their general fund. The City of Hemet is proposing for the summer of 1993, an additional utility fee for NPDES activities. Table 5-1 summarizes the funding sources of all co-permittees.

6.1 INTRODUCTION

The Riverside County NPDES storm water permit requires annual progress reporting to the RWQCB every year. The annual progress report will assist in monitoring compliance of the SWMP once it is developed. The annual report will document the compliance activities of the NPDES permit requirements. These include:

- Summary of compliance activities and any provisions
- Evaluation of the effectiveness of the BMPs
- Proposed revisions or modifications to BMPs and compliance tasks and schedules if any
- Identification of water quality improvements or degradation
- Annual expenditures, including capital, operation and maintenance, surveillance and monitoring, and administration
- Administration information, including enforcement activities, inspections, and public education programs

The NPDES Storm Water Permit issued by the Santa Ana RWQCB requires the annual progress report to include an assessment of the reduction of pollutants discharged to waters of the United States and an evaluation of the effectiveness of the BMPs developed for the storm water discharges. Further, the progress report is required to include BMP modifications and time schedules for implementation needed to achieve compliance with any water quality objectives not attained during the previous year.

It is expected that the BMP activities outlined in the SAR-DAMP will be modified and will evolve over time and with each successive SWMP developed. After a year of implementation, it may be decided that certain BMPs had no positive effect on improving water quality or meeting the objectives of the SAR-DAMP. Similarly, it may be determined

that some BMPs are far more effective than originally anticipated and therefore, greater effort should be made in implementing these controls.

This section presents forms which may be used by the co-permittees for reporting their progress in implementing the BMPs chosen for their individual SWMPs. The forms will be compiled on an annual basis by the RCFC&WCD and submitted with the annual progress report to the Santa Ana RWQCB. The attached forms will be used for three purposes: (1) to meet the requirements of the NPDES permits, (2) to assess progress in reducing pollutants in storm water and (3) to allow evaluation of whether modifications to the final SWMPs are needed in order to meet objectives of the co-permittees.

6.2 METHOD TO EVALUATE BMPs

The nature of urban storm water runoff makes documentation of immediate and measurable improvements in water quality difficult. The ideal way to evaluate the effectiveness of BMPs is to directly measure the reduction of pollutants being discharged to the storm drain system. However, this evaluation method only works well if the only BMPs being implemented are structural controls such as detention basins, oil/water separators, and other treatment devices. Reduction of pollutants achieved by these structural controls may be assessed directly using standard engineering methods. The SAR-DAMP, however, focuses on the implementation of non-structural controls. The "ideal" evaluation method is not appropriate for this case; most non-structural controls must be assessed by applying more indirect methods of evaluation. This is because the nature of these BMPs makes it difficult, if not impossible, to directly measure their effectiveness in reducing pollutant loads. Until acceptable methods are developed to measure effectiveness, only descriptive reports on the progress of compliance can be given.

The following sections describe how the evaluation of BMPs will be conducted for the two program components. Draft reporting forms which can be adapted for individual use by the co-permittees have been prepared.

6.2.1 Compliance Evaluation - Existing Residential and Commercial/Industrial Areas

Environmental education activities are crucial in a storm water management program because they begin to create an environmental awareness of the problem and encourage public involvement in the solution to the problem. As discussed previously, there is no way to estimate the effectiveness of such programs in terms of reduction of pollutant loads. Table 6-1 presents a reporting form for environmental education activities directed at the public, and Table 6-2 presents a reporting form to be used to report on environmental education activities directed at the co-permittee agency.

The basis for evaluating BMPs for activities conducted by municipal governments (solid waste activities, regulatory activities, road and drainage system operations and maintenance activities) can only originate from record keeping and reporting. It is important for all of the co-permittees to document existing ongoing efforts which help to reduce the amount of pollutants discharged to the drainage system, and to begin to keep accurate records associated with these activities if they are not already doing so. Table 6-3 presents a reporting format for the co-permittees to use in reporting progress of their BMP programs. Table 6-4 presents a reporting format for those BMP programs associated with regulatory and other legal activities.

6.2.2 Compliance Evaluation - Construction Site and New Development

The Construction Site and New Development BMP programs outline a number of activities to be conducted by the co-permittees, developers and contractors. Once again, the effectiveness of these activities cannot be measured in relation to reduction in pollutant loadings to the storm drain system. The methods of evaluation are based on progress towards compliance. Tables 6-5 and 6-6 present reporting forms which may be adapted by co-permittees for programs associated with construction and new development.

6.2.3 Evaluation Schedule

Tables 6-1, 6-2, 6-3, 6-4, 6-5, and 6-6 include a series of questions regarding whether a particular BMP was actually implemented during the year. Each of the co-permittees should

provide responses to each of the questions in the following tables on an annual basis. If no action was taken on any particular BMP, this information should be noted on the table. The completed tables should be mailed to the RCFC&WCD at the following address no later than July 30 of each year:

Riverside County Flood Control and Water Conservation District
1995 Market Street
Riverside, CA 92501-1719

The co-permittee responses will be tabulated and summarized by the RCFC&WCD for submittal to the Santa Ana RWQCB by October 31 of every year.

TABLE 6-1

**ADDITIONAL BMP PROGRAMS
ENVIRONMENTAL EDUCATION ACTIVITIES DIRECTED AT PUBLIC**

Date _____
Permittee _____

Preparer _____

If additional space is needed, please attach additional pages.
Pages attached? ☐ Yes ☐ No

Control Description (BMP #)	Activity Description				Record of Compliance			
	Yes or No	Workshop(s) (#/dates)	Educational Materials/ Technical Guidance	Other (please describe)	Workshop Attendance	# of Attendance Mailed Distributed	How was activity advertised? (TV, Newspaper, mailer?)	Was there any followup activity (i.e., news, article, TV, increased public call-in)
E1A Did you perform activities to educate commercial applicators and users of high volume fertilizer, pesticide, and herbicide users on proper uses, management and disposal?								
E12 Did you perform activities to educate the public regarding the impacts on storm water pollution resulting from littering and improper waste disposal practices?								
E13A Did you perform activities to educate the public regarding the impacts of dumping potentially harmful chemicals (i.e., oil, antifreeze, pesticides, herbicides, paints, solvents) into the storm drain system?								
E14A Did you perform activities to educate the commercial industrial sector (including gas stations, automotive repair shops, parking areas, and food service facilities) regarding the effective use of good "housekeeping practices" and use of oil and grease controls (i.e., traps, absorbents, cleaning compounds)?								
E14B Did you perform activities to continue educating the public regarding the environmental impacts of leaks/spills from gasoline, fuel oil, and chemical tanks?								

TABLE 6-1

**ADDITIONAL BMP PROGRAMS
ENVIRONMENTAL EDUCATION ACTIVITIES DIRECTED AT PUBLIC**

Date _____
Permittee _____

Preparer _____

If additional space is needed, please attach additional pages.
Pages attached? ☐ Yes ☐ No

Control Description (BMP #)	Activity Description				Record of Compliance			
	Yes or No	Workshop(s) (#/dates)	Educational Mailers/ Technical Guidance	Other (please describe)	Workshop Attendance	# of Attendance Mailers Distributed	How was activity advertised? (TV, Newspaper, mailer?)	Was there any followup activity (i.e., news, article, TV, increased public call-in)
F5 Did you perform activities to educate the public on the relationship between air pollution and storm water quality problems?								
F6 Did you perform activities to educate the public regarding the types and use of BMPs effective in preventing rainfall from contacting potential contaminants?								
F7 Did you perform activities to educate the public regarding the need to clean up and properly dispose of pet waste?								
F9 Were programs developed to educate landowners/businessowners regarding the need to cover chemical storage areas, waste storage areas, and contaminated industrial areas, and to keep runoff from draining through areas which contain contaminants?								

TABLE 6-2

**ADDITIONAL BMP PROGRAMS
ENVIRONMENTAL EDUCATION ACTIVITIES
DIRECTED AT PERMITTEE AGENCIES (INTERNAL ACTIVITIES)**

Date _____
Permittee _____
Preparer _____

If additional space is needed, please attach additional pages.
Pages attached? ☐ Yes ☐ No

Control Description BMP #	Yes or No	Activity Description			Record of Compliance		
		Describe Activity (Workshops, Guidance Material? Please describe)	Which agencies were included in activity?	Other Activity	General (Workshop Attendance? # of guidance materials distributed?)	What was agency response? (positive, negative -- describe)	Describe any follow- up activity conducted
E1B Did you perform educational activities regarding alternative methods for controlling insects and weeds for those agencies responsible for channel maintenance and park maintenance?							
E10 Did you educate cities/agencies about the need for vehicle inspection and maintenance programs to reduce leakage of oil anti-freeze, hydraulic fluid from public vehicles?					How many vehicles?		

TABLE 6-3

MODIFICATIONS OF EXISTING BMP PROGRAMS -
SOLID WASTE ACTIVITIES AND ROAD & DRAINAGE SYSTEM OPERATION AND MAINTENANCE

Date _____

Co-permittee _____

Preparer _____

Control Description	Yes or No	Responsible Agency (who implemented activity?)	Record of Compliance	
			Provide quantitative measure, if possible (i.e., how many, how much)	Describe any response (i.e., increased public awareness, TV coverage, news coverage, etc.)
SOLID WASTE ACTIVITIES				
SW1 Was there an increase in the number of litter receptacles provided, collected, and maintained in strategic areas?				
At public events?				
SW2 Did you research, strengthen and enforce regulations which provide legal authority to control littering and the improper disposal of potentially harmful wastes?				
SW3 Did you expand programs which provide convenient ways for people to dispose of oil, anti-freeze, pesticides, herbicides, paints, solvents, and other potentially harmful chemicals?				

TABLE 6-3

MODIFICATIONS OF EXISTING BMP PROGRAMS -
SOLID WASTE ACTIVITIES AND ROAD & DRAINAGE SYSTEM OPERATION AND MAINTENANCE

Date _____

Co-permittee _____

Preparer _____

Control Description	Yes or No	Responsible Agency (who implemented activity?)	Record of Compliance	
			Provide quantitative measure, if possible (i.e., how many, how much)	Describe any response (i.e., increased public awareness, TV coverage, news coverage, etc.)
ROAD AND DRAINAGE SYSTEMS OPERATIONS				
OM1 Did you develop and conduct a training program for field personnel to conduct inspection to detect and prevent dumping or routinely discharging pollutants into storm drains and drainage channels?				
OM2 Did you compile information to evaluate the effectiveness of modifying the frequency of cleaning features of the storm drain systems?				
OM3 Did you develop and implement a pilot program to test, remove, and properly dispose of sediment deposits in large detention/retention basins which may contain relatively high concentrations of pollutants?				

TABLE 6-3

MODIFICATIONS OF EXISTING BMP PROGRAMS -
SOLID WASTE ACTIVITIES AND ROAD & DRAINAGE SYSTEM OPERATION AND MAINTENANCE

Date _____

Co-permittee _____

Preparer _____

Control Description	Yes or No	Responsible Agency (who implemented activity?)	Record of Compliance	
			Provide quantitative measure, if possible (i.e., how many, how much)	Describe any response (i.e., increased public awareness, TV coverage, news coverage, etc.)
OM4 Did you develop and implement a program to record field inspection observations and maintenance activities in order to help locate pollutant sources?				
OM5 Were intensified street sweeping programs developed and implemented (targeted at strategic locations and or strategic times)?				
OM6 Were improvements made to pavement repair and maintenance of streets and parking areas?				

TABLE 6-3

MODIFICATIONS OF EXISTING BMP PROGRAMS -
SOLID WASTE ACTIVITIES AND ROAD & DRAINAGE SYSTEM OPERATION AND MAINTENANCE

Date _____

Co-permittee _____

Preparer _____

Control Description	Yes or No	Responsible Agency (who implemented activity?)	Record of Compliance	
			Provide quantitative measure, if possible (i.e., how many, how much)	Describe any response (i.e., increased public awareness, TV coverage, news coverage, etc.)
OM7 Was a contingency plan developed for revegetating and otherwise restoring eroding lands?				
Was information on revegetating and restoring eroded land made available to the public?				
E3B Were storm drain inlets labelled?				
Was the above activity performed by the co-permittees or by public groups?				
E8 Were programs developed and implemented to work with landowners, tenants and/or public groups to apply practical erosion and sediment control practices?				
E10 Were informational signs regarding pet waste placed in parks and other selected areas?				

TABLE 6-3

MODIFICATIONS OF EXISTING BMP PROGRAMS -
SOLID WASTE ACTIVITIES AND ROAD & DRAINAGE SYSTEM OPERATION AND MAINTENANCE

Date _____

Co-permittee _____

Preparer _____

Control Description	Yes or No	Responsible Agency (who implemented activity?)	Record of Compliance	
			Provide quantitative measure, if possible (i.e., how many, how much)	Describe any response (i.e., increased public awareness, TV coverage, news coverage, etc.)
S1A Did you identify and prioritize areas of concern?				
S1B Did you review the operational history of existing det/ret basins?				
S1C Did you evaluate the effectiveness of retrofitting existing storm water detention basins (in identified high priority areas) to function as a combination retention basins?				
S1D Did you evaluate the effectiveness of building and maintaining detention basins in existing high priority areas?				
S1E Did you evaluate the effectiveness of installing in-line detention and/or in- line infiltration facilities?				

TABLE 6-3

MODIFICATIONS OF EXISTING BMP PROGRAMS -
SOLID WASTE ACTIVITIES AND ROAD & DRAINAGE SYSTEM OPERATION AND MAINTENANCE

Date _____

Co-permittee _____

Preparer _____

Control Description	Yes or No	Responsible Agency (who implemented activity?)	Record of Compliance	
			Provide quantitative measure, if possible (i.e., how many, how much)	Describe any response (i.e., increased public awareness, TV coverage, news coverage, etc.)
SIF Did you evaluate the effectiveness of establishing, maintaining, and testing wetlands and riparian vegetation in urban and urbanizing areas.				

TABLE 6-4

MODIFICATIONS TO EXISTING BMP PROGRAMS
REGULATORY AND LEGAL ACTIVITIES

Date _____
 Permittee _____
 Preparer _____

BMP #	No Activity	Describe Activity Conducted	Record of Compliance		
			New Ordinance?	Existing Strengthened	# of Enforcement Actions
R1		Describe any activity performed to research, strengthen (if necessary) and enforce existing regulations which provide the legal authority to eliminate cross-connections allowing sanitary sewage and/or commercial/industrial wastewater to enter storm drains or drainage channels.			
R2		Describe any activity undertaken to research, strengthen, and enforce regulations which give the County the legal authority to prevent the improper disposal of pollutants into storm sewers and drainage channels.			
R3		Describe any actions taken pertaining to leash laws and pet waste clean-up on selected public-use areas; describe enforcement this year.			
R4		Describe any activities performed to research, strengthen (if necessary) and enforce regulations which give municipalities the authority to require oil and grease controls in areas which are significant sources			

TABLE 6-4

MODIFICATIONS TO EXISTING BMP PROGRAMS
REGULATORY AND LEGAL ACTIVITIES

Date _____
 Permittee _____
 Preparer _____

BMP #	No Activity	Describe Activity Conducted	Record of Compliance		
			New Ordinance?	Existing Strengthened	# of Enforcement Actions
R5		Describe any activities performed to research, strengthen (if necessary), implement, and enforce regulations providing legal authority to prohibit new direct connections between roof drains and storm drains or drainage channels and to require retrofitting existing buildings where necessary and practical			

TABLE 6-5

CONSTRUCTION SITE BMP PROGRAMS
REGULATORY AND EDUCATIONAL ACTIVITIES

Date _____

Permittee _____

Preparer _____

Proposed BMP # Activity Description	No Activity	Describe Activity Conducted	Record of Compliance			
			New Ordinance or Policy Adopted	Existing Ordinance Strengthened	# of Enforcement Actions	# of Workshops Held
R6 Describe any activity performed to review and evaluate existing erosion control ordinances						
R7 Describe any activity undertaken to develop a model construction site water quality control ordinance including developing a list of erosion control measures and building material management practices						
R7C Describe any actions taken to facilitate compliance with the California Construction Activity Storm Water Permit						
R7D Was a checklist created for inspectors to follow during construction site inspections						
R8 Describe any actions taken to adopt policies requiring CEQA and NEPA compliance documents to construction site impacts						
R8A Was the initial study checklist expanded?						
R8B Are feasible mitigation measures being incorporated into the project design where significant impacts have been determined to occur?						

TABLE 6-5

CONSTRUCTION SITE BMP PROGRAMS
REGULATORY AND EDUCATIONAL ACTIVITIES

Date _____
 Permittee _____
 Preparer _____

Proposed BMP # Activity Description	No Activity	Describe Activity Conducted	Record of Compliance			
			New Ordinance or Policy Adopted	Existing Ordinance Strengthened	# of Enforcement Actions	# of Workshops Held
E11 Describe any actions taken to educate building industry professionals and building department personnel on effective construction site erosion control and building materials management practices						

TABLE 6-6

NEW DEVELOPMENT BMP PROGRAMS
REGULATORY AND EDUCATIONAL ACTIVITIES

Date _____

Permittee _____

Preparer _____

Proposed BMP # Activity Description	No Activity	Describe Activity Conducted	Record of Compliance			
			New Ordinance or Policy Adopted	Existing Ordinance Strengthened	# of Enforcement Actions	# of Workshops Held
R9 Describe any action taken to review and evaluate existing ordinances for structural controls that control storm water quality						
R10 Describe any activities taken to develop a model storm water management ordinance						
R11 Describe actions taken to require that on-site facilities be maintained by on-site maintenance crews, residential homeowners, the city, etc.						
R11A Was a re-inspection plan and self reporting program developed?						
R12 Describe any actions taken to require that all CEQA/NEPA documents address environmental impacts of urban runoff and incorporate enforceable mitigation measures						
R12A Were initial study checklists expanded?						
R12B Are feasible mitigation measures being incorporated into the project design where significant impacts are determined to occur?						

TABLE 6-6

NEW DEVELOPMENT BMP PROGRAMS
REGULATORY AND EDUCATIONAL ACTIVITIES

Date _____
 Permittee _____
 Preparer _____

Proposed BMP # Activity Description	No Activity	Describe Activity Conducted	Record of Compliance			
			New Ordinance or Policy Adopted	Existing Ordinance Strengthened	# of Enforcement Actions	# of Workshops Held
R13 Describe actions taken to facilitate compliance with the California General Industrial Storm Water Permit						
E12, E13 Describe any actions taken to educate building industry professionals and building department personnel on the issues of storm water quality and quantity including providing generic plans, and demonstration projects						

7.1 Introduction

The modified and additional BMPs discussed in the SMR-DAMP focus on non-structural controls also referred to as source controls. However, the NPDES permit issued by the Santa Ana RWQCB for the Santa Ana region also calls for the consideration of structural controls. The permit suggests structural controls such as first flush diversion, detention/retention basins, infiltration trenches/basins, porous pavement, oil/grease separators, grass swales, wire concentrators, etc. be considered. Additionally, the permit states that engineering and design modification of the existing structures should also be considered.

RCFC&WCD and the co-permittees recognize that a need may exist for structural control. As described in Section 4.3.3, these structural control measures can be categorized as:

Features that increase infiltration

The goal is to increase infiltration of runoff from small storm events where appropriate. By increasing infiltration, the amount of pollutants that can reach downstream surface waters is effectively reduced. Storm water infiltration features include grass swales, retention basins and filter strips, among others.

Features that direct runoff from nuisance areas

Directing flows from around more pollutant-prone areas, such as equipment yards and gas stations, can reduce the amount of pollutants entering storm water. Directing storm water away from pollutant-prone areas can be adopted as a relatively simple standard practice in designing storm drainage plans for development projects.

Features that "treat" storm water

This approach makes use of known wastewater treatment methods, such as filtration, separation and settling, for storm water pollution control. For example, site designs can incorporate detention basins and/or constructed wetlands for volume reduction and pollutant settling or include the installation of oil/water separators at storm drain inlets/outlets.

7.2 The Santa Ana Regional Approach

Incorporating structural control features in the design of a new development can be more cost-effective than retrofitting the completed development at a later time. The RCFC&WCD and co-permittees recognize this value of on-site structural control measures (such as on-site detention facilities) in planning larger developments. Thus, BMP R10, requires an evaluation of potential structural controls where appropriate and feasible for a new development.

For existing developed areas, the RCFC&WCD and co-permittees emphasize the EPA tiered approach toward implementing municipal storm water compliance programs. Tier I calls for baseline general permitting of storm water discharges which focuses on areawide public education and other low cost non-structural source controls. Tier II will require municipalities to address specific problem watersheds and subwatersheds. These are watersheds that fail to meet water quality standards as a result of storm water discharges despite the implementation of source control BMPs. When problem subwatersheds have been identified, structural controls in strategic areas can be implemented.

This emphasis on source control in municipal storm water compliance programs is also suggested by the California Municipal Storm Water Best Management Practice Handbook developed by the APWA/SWRCB Storm Water Task Force. Consistent with the EPA tiered approach, Section 2 of the Handbook suggests that a watershed (or subwatershed) master plan be developed to establish an overall "framework" for storm water pollution control. The framework would consist of a system of on-site and regional storm water quality and quantity controls. This type of watershed planning requires an evaluation of storm water

quality in the region in order to determine what are the problem watersheds and subwatersheds, and what structural controls would be effective in reducing pollutant loads.

In Section 5, the Handbook recognizes the unique climate of California, and suggests caution in designing structural measures, particularly those measures which require year round vegetation. Finally, the Handbook notes that many of these structural controls will not remove all pollutants and their removal efficiency is difficult to predict given the limited understanding of the relationship between facility design criteria and performance.

The RCFC&WCD is currently monitoring storm water discharges in the Santa Ana region. The results of this program will be useful in identifying any existing problem subwatersheds in the region, which would benefit from structural control measures. The monitoring results will also be useful in determining if the baseline, non-structural measures are effective in controlling pollutants. Identification of problem subwatersheds will not necessarily lead to the conclusion that expensive, large-scale structural controls are needed. It is possible that this monitoring may lead to further identification of pollutants requiring the targeted source controls. As stated in the permit, the purpose of all the BMPs is to reduce pollutant loads to the maximum extent practicable.

The RCFC&WCD and the co-permittees have identified a strategy for evaluating the potential for structural controls in existing residential and commercial areas. This strategy is to *evaluate the need and appropriate locations for structural controls to remove pollutants from storm water runoff*. The following specific actions would be undertaken upon evaluation of water quality monitoring data in the region:

1. Identify and prioritize areas of concern within the Santa Ana region which are downstream of high pollutant loading areas.
2. Review the operational history of existing detention and retention basins.
3. Determine the effectiveness of existing maintenance operations by compiling information to evaluate the additional pollutant removal attributable to increasing the frequency of cleaning storm drain inlets, catch basins, storm drains, storm water pump stations, drainage channels, and temporary storm

water detention basins in areas where sediments and/or debris tend to accumulate.

4. Evaluate the effectiveness of retrofitting existing storm water detention basins (in identified high priority areas) to function as combination retention/detention basins to retain the water for longer periods and trap sediments from small storm events.
5. Evaluate the effectiveness of building and maintaining detention basins in existing high priority areas of concern.
6. Evaluate the effectiveness of installing in-line detention and/or in-line infiltration facilities within urban areas to trap and/or remove sediments in runoff generated during small storm events.
7. Evaluate the effectiveness of establishing, maintaining, and testing wetlands and riparian vegetation in retrofitted and/or new drainage channels. Coordinate with Riverside Land Conservancy where appropriate.

This overall approach, which targets problem subwatersheds, will prove to be most practical for the municipalities of the Santa Ana region in terms of cost and effectiveness in reducing pollutant loads. Given the variety of uncertainties with regard to the effectiveness of structural controls, particularly in dry climates such as the Santa Ana region, this approach is especially practical for the co-permittees.